

Supplementary material

Table 1 Major FAs concentration (μg of fatty acid / μL of the sample) of the different samples at the different fermentation times (0, 6, 12, 24, and 48 h). CD-Control Diet and WD-Western Diet models. The values presented are the means of three biological and two analytical replicates the bars represent the standard deviation. Different lowercase letters indicate significant differences ($p < 0.05$) between the CD samples and capital letters indicate significant differences ($p < 0.05$) between the WD samples. CD= Control diet; WD= Western diet; n.d.= not detected; u.q.l= under quantification limit

μg of FA/ μL of the sample		Fish oil+Pomegranate oil								Pomegranate oil								Fish oil											
		Original sample	Control Diet				Western Diet				Original sample	Control Diet				Western Diet				Original sample	Control Diet				Western Diet				
			6h	12h	24h	48h	6h	12h	24h	48h		6h	12h	24h	48h	6h	12h	24h	48h		6h	12h	24h	48h	6h	12h	24h	48h	
Myristic acid	C14:0	1.67 \pm 0.62 ^{AA}	1.71 \pm 0.14 ^a	1.65 \pm 0.12 ^a	1.32 \pm 0.2 ^a	1.54 \pm 0.1 ^{3a}	1.44 \pm 0.06 ^A	1.55 \pm 0.05 ^A	1.54 \pm 0.11 ^A	1.43 \pm 0.05 ^A	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	11.36 \pm 3.52 ^{AA}	7.11 \pm 0.39 ^b	7.03 \pm 0.27 ^b	5.95 \pm 0.41 ^b	6.29 \pm 0.32 ^b	4.94 \pm 0.28 ^B	6.53 \pm 0.23 ^B	6.87 \pm 0.38 ^B	6.02 \pm 0.44 ^B		
Palmitic acid	C16:0	4.38 \pm 1.42 ^{AA}	3.5 \pm 0.17 ^b	3.43 \pm 0.41 ^b	2.62 \pm 0.5 ^{1b}	3.16 \pm 0.3 ^{1b}	2.92 \pm 0.2 ^A	3.25 \pm 0.28 ^A	3.33 \pm 0.32 ^A	2.91 \pm 0.53 ^A	4.9 \pm 0.3 ^{4A}	2.31 \pm 0.26 ^b	2.87 \pm 0.37 ^b	2.14 \pm 0.40 ^b	2.68 \pm 0.57 ^b	2.42 \pm 0.07 ^B	2.53 \pm 0.07 ^B	2.43 \pm 0.07 ^B	2.35 \pm 0.31 ^B	23.17 \pm 4.61 ^{AA}	13.5 \pm 0.86 ^b	13.61 \pm 0.46 ^b	11.48 \pm 1.11 ^b	12.41 \pm 0.70 ^b	11.34 \pm 0.66 ^B	12.64 \pm 0.47 ^B	14.45 \pm 0.75 ^B	11.6 \pm 0.39 ^B	
Stearic acid	C18:0	1.22 \pm 0.35 ^{AA}	1.45 \pm 0.01 ^a	1.41 \pm 0.07 ^a	1.18 \pm 0.1 ^{2a}	1.28 \pm 0.0 ^{7a}	1.33 \pm 0.12 ^A	1.42 \pm 0.12 ^A	1.33 \pm 0.10 ^A	1.3 \pm 0.07 ^A	3.38 \pm 0.15 ^{AA}	2.35 \pm 0.14 ^b	2.5 \pm 0.11 ^b	2.11 \pm 0.17 ^b	2.43 \pm 0.58 ^b	2.25 \pm 0.05 ^{BC}	2.4 \pm 0.04 ^B	2.18 \pm 0.02 ^C	2.21 \pm 0.04 ^C	3.93 \pm 0.08 ^{AA}	2.59 \pm 0.17 ^b	2.59 \pm 0.09 ^b	2.25 \pm 0.23 ^b	2.47 \pm 0.12 ^b	2.37 \pm 0.18 ^B	2.64 \pm 0.12 ^B	0.83 \pm 0.13 ^C	2.4 \pm 0.13 ^B	
Oleic acid	C18:1 c9	2.68 \pm 0.94 ^{AA}	1.36 \pm 0.82 ^a	2.45 \pm 1.65 ^a	u.q.l	1.31 \pm 0.3 ^{1a}	1.1 \pm 0.48 ^A	1.14 \pm 0.81 ^A	3.18 \pm 0.89 ^A	3.73 \pm 0.83 ^A	9.63 \pm 0.5 ^{AA}	4.16 \pm 0.74 ^b	6.62 \pm 0.70 ^{ab}	1.86 \pm 2.53 ^b	4.53 \pm 1.78 ^{ab}	4.3 \pm 0.5 ^B	3.73 \pm 0.82 ^B	4.75 \pm 0.45 ^B	4.58 \pm 2.30 ^B	10.02 \pm 2.21 ^{AA}	4.3 \pm 0.78 ^b	5.95 \pm 1.61 ^b	2.9 \pm 0.94 ^b	3.38 \pm 1.33 ^b	3.49 \pm 0.65 ^B	2.92 \pm 0.76 ^B	3.44 \pm 1.28 ^B	6.75 \pm 2.82 ^B	
Linoleic acid	C18:2 c9c12	1.42 \pm 0.52 ^{AA}	1.2 \pm 0.1 ^{ab}	1.08 \pm 0.11 ^{ab}	0.85 \pm 0.1 ^{3b}	0.95 \pm 0.09 ^{ab}	0.94 \pm 0.04 ^{AB}	0.92 \pm 0.13 ^B	0.88 \pm 0.07 ^B	0.75 \pm 0.05 ^B	10.93 \pm 0.57 ^{AA}	4.97 \pm 0.25 ^{bc}	5.4 \pm 0.38 ^b	4.08 \pm 0.34 ^c	0.85 \pm 0.28 ^a	4.82 \pm 0.13 ^B	4.63 \pm 0.10 ^B	4.32 \pm 0.02 ^B	4.39 \pm 0.09 ^B	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
α -linolenic acid	C18:3 c9c12c15	0.41 \pm 0.14 ^{AA}	0.58 \pm 0.07 ^a	0.53 \pm 0.04 ^a	0.41 \pm 0.1 ^{6a}	0.51 \pm 0.03 ^a	0.49 \pm 0.02 ^A	0.5 \pm 0.04 ^A	0.46 \pm 0.06 ^A	0.48 \pm 0.05 ^A	1.07 \pm 0.06 ^{AA}	0.68 \pm 0.05 ^b	0.77 \pm 0.04 ^b	0.62 \pm 0.05 ^b	0.72 \pm 0.16 ^b	0.67 \pm 0.02 ^B	0.68 \pm 0.01 ^B	0.63 \pm 0.01 ^B	0.64 \pm 0.01 ^B	2.17 \pm 0.45 ^{AA}	0.92 \pm 0.05 ^b	0.89 \pm 0.05 ^b	0.69 \pm 0.07 ^b	0.72 \pm 0.03 ^b	0.77 \pm 0.04 ^B	0.57 \pm 0.05 ^B	0.48 \pm 0.05 ^B	0.42 \pm 0.03 ^B	
CLA isomer	C18:2 t9t11	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	0.21 \pm 0.04 ^{0b}	1.21 \pm 0.03 ^a	1.16 \pm 0.37 ^a	0.99 \pm 0.09 ^{ab}	0.64 \pm 0.02 ^{bc}	1.04 \pm 0.05 ^B	1.51 \pm 0.14 ^A	0.83 \pm 0.06 ^{BC}	0.69 \pm 0.04 ^C	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
Eicosape ntaenoic acid (EPA)	C20:5 n-3	2.12 \pm 0.98 ^{AA}	1.65 \pm 0.31 ^a	1.38 \pm 0.28 ^a	1.3 \pm 0.13 ^a	1.49 \pm 0.1 ^{8a}	1.15 \pm 0.11 ^B	0.9 \pm 0.31 ^B	1.09 \pm 0.15 ^B	1.08 \pm 0.13 ^B	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	18.91 \pm 7.77 ^{AA}	6.13 \pm 0.23 ^b	5.58 \pm 0.52 ^b	5.82 \pm 0.34 ^b	6.34 \pm 0.44 ^b	4.25 \pm 0.16 ^B	1.27 \pm 0.14 ^B	4.85 \pm 0.22 ^B	4.62 \pm 0.52 ^B	
Punicic acid	C18:3 c9t11c13	10.58 \pm 4.92 ^{AA}	0.65 \pm 0.16 ^b	0.48 \pm 0.20 ^b	0.62 \pm 0.05 ^b	0.5 \pm 0.05 ^b	0.44 \pm 0.08 ^B	0.31 \pm 0.19 ^B	0.45 \pm 0.15 ^B	0.4 \pm 0.10 ^B	119.03 \pm 6.82 ^{AA}	3.75 \pm 0.21 ^b	4.17 \pm 0.65 ^b	3.42 \pm 0.31 ^b	2.68 \pm 0.73 ^b	3.61 \pm 0.39 ^B	3.68 \pm 0.21 ^B	3.14 \pm 0.14 ^B	3.04 \pm 0.24 ^B	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
α -eleostearic acid	C18:3 c9t11t13	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	5.8 \pm 0.4 ^{3A}	0.99 \pm 0.04 ^b	0.91 \pm 0.23 ^{bc}	0.75 \pm 0.05 ^{bc}	0.45 \pm 0.11 ^c	0.78 \pm 0.29 ^B	0.86 \pm 0.03 ^B	0.67 \pm 0.06 ^B	0.55 \pm 0.03 ^B	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
catalpic acid	C18:3 t9t11c13	0.57 \pm 0.19 ^{AA}	0.76 \pm 0.16 ^a	0.54 \pm 0.23 ^a	0.54 \pm 0.07 ^a	0.51 \pm 0.07 ^a	0.51 \pm 0.12 ^A	0.34 \pm 0.21 ^A	0.4 \pm 0.08 ^A	0.43 \pm 0.13 ^A	5.82 \pm 0.39 ^{AA}	4.27 \pm 0.31 ^{bc}	4.72 \pm 0.68 ^{ab}	3.77 \pm 0.35 ^{bc}	3.14 \pm 0.74 ^c	4.12 \pm 0.52 ^B	4.11 \pm 0.20 ^B	3.5 \pm 0.09 ^B	3.37 \pm 0.22 ^B	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
β -eleostearic acid	C18:3 t9t11t13	1.13 \pm 0.20 ^{AA}	2.18 \pm 0.62 ^{ab}	1.6 \pm 0.79 ^{ab}	1.91 \pm 0.2 ^{5b}	2.73 \pm 0.2 ^{8a}	1.44 \pm 0.31 ^A	1.11 \pm 0.66 ^A	1.75 \pm 0.34 ^A	2.26 \pm 0.57 ^A	10.42 \pm 0.67 ^{CC}	21.15 \pm 2.36 ^{bc}	42.57 \pm 7.25 ^a	32.6 \pm 3.95 ^{ab}	40.32 \pm 4.37 ^a	27.14 \pm 7.45 ^B	34.29 \pm 2.46 ^{AB}	33.47 \pm 0.9 ^{AB}	39.8 \pm 0.07 ^A	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	
Docosap entaenoic acid (DPA)	C22:5 n-3	0.55 \pm 0.22 ^{AA}	0.24 \pm 0.04 ^b	0.17 \pm 0.03 ^b	0.19 \pm 0.04 ^b	0.26 \pm 0.02 ^b	0.18 \pm 0.02 ^B	0.11 \pm 0.04 ^B	0.19 \pm 0.03 ^B	0.22 \pm 0.05 ^B	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	3.94 \pm 1.22 ^{AA}	1.04 \pm 0.04 ^b	1.06 \pm 0.11 ^b	1.14 \pm 0.09 ^b	1.34 \pm 0.08 ^b	0.78 \pm 0.04 ^B	0.68 \pm 0.08 ^B	1.13 \pm 0.04 ^B	1.12 \pm 0.08 ^B	
Docosah exaenoic acid (DHA)	C22:6 n-3	1.51 \pm 0.67 ^{AA}	0.66 \pm 0.16 ^b	0.52 \pm 0.19 ^b	0.56 \pm 0.1 ^{1b}	0.78 \pm 0.1 ^b	0.48 \pm 0.07 ^B	0.29 \pm 0.12 ^B	0.52 \pm 0.02 ^B	0.51 \pm 0.21 ^B	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	11.1 \pm 4.43 ^{AA}	2.69 \pm 0.12 ^b	2.61 \pm 0.23 ^b	3.06 \pm 0.25 ^b	3.57 \pm 0.22 ^b	2.00 \pm 0.10 ^B	1.48 \pm 0.09 ^B	2.9 \pm 0.27 ^B	3.7 \pm 0.27 ^B	

Table 2 pH values of the different samples at the different fermentation times (0, 6, 12, 24 and 48 h). CD-Control Diet and WD- Western Diet model. The values presented are the means of three biological replicates \pm standard deviation. Different letters indicate significant differences ($p < 0.05$). The capital letters (A,B,C) indicate the differences among samples Negative control, Positive control (FOS) and bioactive lipids sources (Fish oil, Pomegranate oil and a mixture of both) at the same time. The small letters (a,b,c) indicate the differences for the same sample over time.

Time (h)	Negative control CD	Negative control WD	FOS CD	FOS WD	Fish oil CD	Fish oil WD	Pomegranate oil CD	Pomegranate oil WD	Fish oil+Pomegranate oil CD	Fish oil+Pomegranate oil WD
0	7.33 \pm 0.15 ^a	7.48 \pm 0.08 ^a	7.33 \pm 0.15 ^a	7.48 \pm 0.08 ^a	7.33 \pm 0.15 ^a	7.48 \pm 0.08 ^a	7.33 \pm 0.15 ^a	7.48 \pm 0.08 ^a	7.33 \pm 0.15 ^a	7.48 \pm 0.08 ^a
6	6.69 \pm 0.46 ^{b,A}	6.17 \pm 0.01 ^{b,B}	5.05 \pm 0.15 ^{b,C}	4.92 \pm 0.01 ^{b,C}	6.56 \pm 0.03 ^{b,AB}	6.20 \pm 0.01 ^{c,B}	6.41 \pm 0.04 ^{b,AB}	6.2 \pm 0.02 ^{c,B}	6.33 \pm 0.02 ^{b,AB}	6.19 \pm 0.00 ^{c,B}
12	6.42 \pm 0.18 ^{b,AB}	6.07 \pm 0.03 ^{c,B}	4.45 \pm 0.07 ^{c,E}	4.91 \pm 0.03 ^{b,D}	6.39 \pm 0.02 ^{b,AB}	6.17 \pm 0.01 ^{c,C}	6.29 \pm 0.04 ^{bc,BC}	6.18 \pm 0.02 ^{c,C}	6.2 \pm 0.04 ^{b,C}	6.19 \pm 0.01 ^{c,C}
24	6.28 \pm 0.15 ^{b,A}	6.19 \pm 0.01 ^{b,A}	4.29 \pm 0.02 ^{cd,B}	4.83 \pm 0.07 ^{b,B}	6.18 \pm 0.03 ^{c,A}	6.22 \pm 0 ^{bc,A}	6.21 \pm 0.04 ^{bc,A}	6.25 \pm 0.03 ^{c,A}	6.22 \pm 0.06 ^{b,A}	6.22 \pm 0.02 ^{bc,A}
48	6.28 \pm 0.17 ^{b,ABC}	6.26 \pm 0.02 ^{b,ABC}	4.18 \pm 0.02 ^{d,E}	4.35 \pm 0.01 ^{c,D}	6.12 \pm 0.02 ^{d,C}	6.37 \pm 0.01 ^{b,A}	6.14 \pm 0.07 ^{c,BC}	6.36 \pm 0.02 ^{b,A}	6.14 \pm 0.03 ^{b,BC}	6.31 \pm 0.01 ^{b,AB}

Table 3 Amino acids concentration values (mg of amino acid/L of sample) of the different samples at the different fermentation times (0, 6, 12, 24 and 48 h). CD-Control Diet and WD- Western Diet model. The values presented are the means of three biological replicates \pm standard deviation. Different letters indicate significant differences ($p < 0.05$). The capital letters (A,B,C) indicate the differences among samples Negative control, Positive control (FOS) and bioactive lipids sources (Fish oil, Pomegranate oil and a mixture of both) at the same time. The small letters (a,b,c) indicate the differences for the same sample over time.

Sample	Time (h)	Amino acids (mg/L)																
		Aspartic acid	Glutamic acid	Cysteine	Asparagine	Serine	Glycine	Threonine	Arginine	Alanine	GABA	Tyrosine	Valine	Methionine	Tryptophan	Phenylalanine	Isoleucine	Leucine
Negative control CD	0	16.37 \pm 1.06	34.49 \pm 3.38	10.86 \pm 1.89	16.6 \pm 1.38	23.65 \pm 1.6	10.78 \pm 1.8	18.46 \pm 1.42	29.67 \pm 1.89	29.18 \pm 2.74	4.7 \pm 0.71	8.87 \pm 1.04	27.47 \pm 2.02	8.52 \pm 0.62	4.42 \pm 0.46	25.53 \pm 2.24	21.76 \pm 1.91	34.33 \pm 2.5
	6	27.73 \pm 2.7 ^A	43.96 \pm 0.4 ^{b,C} _D	23.16 \pm 2.31 _{a,AB}	29.99 \pm 0.8 _{7a,BC}	41.23 \pm 1.5 _{9a,AB}	34.78 \pm 2.31 _{a,D}	36.05 \pm 1.76 _{a,AB}	48 \pm 3.34 ^{a,A}	39.41 \pm 1.2 _{5c,DE}	12.87 \pm 0.83 _B	16.4 \pm 1.02 ^{ab} _{CD}	45.36 \pm 2.46 ^{a,BC} _D	17.5 \pm 0.65 ^{a,C} _D	8.92 \pm 0.46 ^{a,DEF}	49.16 \pm 3.4 ^{a,DE}	37.49 \pm 3.94 ^{ab,A} _{BC}	53.93 \pm 2.93 _{ab,BC}
	12	18.84 \pm 2.2 ^b _A	73.43 \pm 4.74 ^A _a	10.45 \pm 2.77 _{b,ABC}	22.74 \pm 4.0 _{4^b,B}	34.82 \pm 4.5 _{4^a,B}	32.29 \pm 7.7 ^a _B	30.87 \pm 0.48 _{b,A}	15.52 \pm 2.48 _{b,AB}	69.96 \pm 5.5 _{3^{ab},BC}	19.2 \pm 1.95 ^{bc} _B	21.79 \pm 9.63 ^a _{AB}	44.4 \pm 0.7 _{3^a,ABC}	12.37 \pm 2.34 ^b _{BC}	6.67 \pm 0.68 ^{a,BC}	40.52 \pm 9.43 ^{ab,BC}	32.86 \pm 5.1 ^{b,AB}	51.88 \pm 0.25 _{b,AB}
	24	3.86 \pm 0.99 ^c _B	77.72 \pm 7.23 ^A _A	5.98 \pm 0.58 ^{bc} _{BC}	0.36 \pm 0.06 ^c _B	2.91 \pm 0.29 _{b,BCD}	47.8 \pm 3.85 ^a _{ABC}	3.32 \pm 1.05 ^c _{DE}	9.83 \pm 4.13 ^b _C	78.95 \pm 7.6 _{7^a,A}	27.96 \pm 5.73 ^b _{DE}	3.54 \pm 0.41 ^{b,c}	49.76 \pm 1.11 ^{a,AB}	19.11 \pm 0.35 ^a _{BC}	6.62 \pm 1.59 ^{a,ABC}	34.73 \pm 1.92 ^{b,B}	43.34 \pm 1.59 ^{a,BC}	59.5 \pm 2.53 ^b _{CD}
	48	2.67 \pm 0.21 ^c _B	75.2 \pm 5.58 ^{a,A}	1.32 \pm 0.34 ^{c,C}	0.2 \pm 0.05 ^{c,B}	1.78 \pm 0.19 _{b,BC}	42.75 \pm 15.7 _{6^a,ABC}	4.01 \pm 0.74 ^{c,C}	10.97 \pm 3.39 _{b,ABC}	64.6 \pm 4.27 _{b,AB}	43.21 \pm 4.87 ^a _{CD}	18.8 \pm 4.63 ^{a,C}	48 \pm 4.54 ^a _A	13.24 \pm 0.24 ^b _{CD}	6.32 \pm 1.37 ^{a,B}	33.43 \pm 3.19 ^{b,AB}	36.87 \pm 2.24 ^{ab,A}	50.02 \pm 4.13 _{b,CD}
Negative control WD	0	12.75 \pm 0.84	47.59 \pm 13.3 ₁	10.77 \pm 1.26	13.54 \pm 3.6 ₅	1.67 \pm 0.22	18.86 \pm 7.92	21.17 \pm 4.63	42.69 \pm 16.4 ₆	48.47 \pm 20.14	20.64 \pm 12.8	10.22 \pm 2.26	33.82 \pm 6.95	12.3 \pm 3.05	5.54 \pm 1.02	29.65 \pm 4.69	26.48 \pm 6.1	41.01 \pm 6.02
	6	3.35 \pm 0.19 ^a _C	57.41 \pm 2.05 ^b _{AB}	7.96 \pm 0.68 ^a _C	0.59 \pm 0.00 _{b,D}	1.19 \pm 0.02 ^a _C	53.42 \pm 2.18 _{a,B}	0.9 \pm 0.07 ^{b,C}	14.06 \pm 0.52 _{a,BC}	50.5 \pm 1.43 _{b,BC}	22.75 \pm 1.08 ^b _B	14.62 \pm 0.49 ^a _E	56.57 \pm 1.52 ^{a,AB} _{BC}	19.8 \pm 0.81 ^{a,A} _{BC}	13.19 \pm 1.18 ^{a,AB}	52.72 \pm 3.69 ^{a,CDE}	46.1 \pm 1.57 ^{a,AB}	65.73 \pm 2.87 _{a,ABC}
	12	2.63 \pm 0.01 ^a _B	81.19 \pm 8.89 ^A _A	4.62 \pm 0.57 ^b _{CED}	0.61 \pm 0.13 _{b,C}	1.07 \pm 0.18 ^a _D	39.00 \pm 2.00 _{b,ABC}	2.86 \pm 0.57 ^a _B	11.05 \pm 0.88 _{ab,BC}	64.43 \pm 2.6 _{7^a,BC}	9.97 \pm 0.14 ^{c,B}	6.22 \pm 0.44 ^{c,C}	53.36 \pm 3.53 ^{a,AB}	16.57 \pm 1.59 ^a _{AB}	7.4 \pm 0.21 ^{b,B}	47.75 \pm 3.64 ^{a,ABC}	35.83 \pm 1.93 ^{a,AB}	57.99 \pm 3.37 _{b,AB}
	24	2.55 \pm 0.19 ^b _B	71.03 \pm 7.26 ^a _{b,A}	5.42 \pm 0.48 ^b _C	<0.05	1.49 \pm 0.25 ^a _{CD}	40.91 \pm 1.79 _{b,C}	2.56 \pm 0.8 ^{a,E}	12.05 \pm 2.4 ^a _{b,BC}	77.59 \pm 5.9 _{1^a,A}	43.06 \pm 6.33 ^a _{DE}	7.6 \pm 0.45 ^{b,C}	49.41 \pm 5.78 ^{a,AB}	16.74 \pm 2.07 ^a _{CD}	7.46 \pm 0.19 ^{b,AB}	35.64 \pm 2.12 ^{b,B}	41.65 \pm 4.25 ^{ab,B} _C	53.06 \pm 3.35 _{b,C}
	48	2.53 \pm 0.73 ^a _B	1.37 \pm 0.38 ^{c,B}	4.68 \pm 0.79 ^b _B	0.88 \pm 0.14 ^a _B	0.64 \pm 0.11 _{b,C}	27.8 \pm 6.24 ^{c,A} _{BC}	1.09 \pm 0.1 ^{b,C}	8.83 \pm 1.18 ^b _{CD}	42.82 \pm 0.2 _{2^c,C}	22.34 \pm 3.65 ^b _D	2.29 \pm 0.6 ^{d,C}	23.04 \pm 6.28 ^b _E	7.81 \pm 1.02 ^{b,D} _E	4.04 \pm 0.56 ^{b,CDE}	13.99 \pm 0.48 ^{c,C}	6.27 \pm 0.12 ^{c,B}	9.41 \pm 1.05 ^c _E
FOS CD	6	29.52 \pm 0.65 ^a _A	50.47 \pm 2.08 ^c _{BC}	24.57 \pm 0.71 _{a,A}	26.57 \pm 1.5 _{9^a,BC}	47.13 \pm 1.8 _{3^a,A}	45.81 \pm 2.06 _{ab,CD}	40.13 \pm 0.92 _{a,A}	41.1 \pm 5.88 ^a _A	44.46 \pm 2.6 _{4^d,CD}	14.6 \pm 2.7 ^{c,B}	17.41 \pm 0.7 ^{b,B} _{CD}	49.87 \pm 2.07 ^{ab,ABC}	17.81 \pm 0.49 ^a _{CD}	9.96 \pm 0.52 ^{a,CDE}	47.52 \pm 1.6 ^{a,DE}	40.63 \pm 1.9 ^{a,ABC}	61.98 \pm 4.37 _{a,ABC}
	12	18.76 \pm 3.76 _{b,A}	64.69 \pm 8.77 ^a _{c,A}	9.23 \pm 2.42 ^{c,A} _{BCD}	17.56 \pm 1.1 _{3^{ac},B}	33.3 \pm 1.9 ^b _B	36.6 \pm 3.63 ^b _{ABC}	28.32 \pm 1.83 ^c _A	16.01 \pm 1.77 _{b,AB}	65.38 \pm 1.8 _{6^c,BC}	18.49 \pm 2.33 ^b _B	19.25 \pm 1.53 ^b _{AB}	37.23 \pm 3.54 ^{a,C}	11.2 \pm 0.73 ^{b,C}	6.57 \pm 0.37 ^{c,BC}	36.13 \pm 5.17 ^{ab,BC}	29.48 \pm 5.07 ^{b,B}	46.94 \pm 1.26 _{b,B}
	24	22.89 \pm 1.79 _{ab,A}	83.19 \pm 2.59 ^a _{b,A}	15.07 \pm 1.77 _{b,A}	24.24 \pm 0.6 _{4^{ab},A}	46.64 \pm 1.9 _{2^a,A}	59.93 \pm 3.94 _{a,A}	38.43 \pm 0.85 _{ab,A}	15.8 \pm 1.92 ^b _{AB}	85.38 \pm 1.2 _{5^a,A}	75.78 \pm 16.51 _{a,B}	57.31 \pm 13.33 _{a,A}	42.27 \pm 9.85 ^{a,B}	17.23 \pm 1.49 ^a _{CD}	8.58 \pm 0.25 ^{b,A}	35.46 \pm 1.34 ^{ab,B}	42.26 \pm 0.27 ^{a,BC}	61.09 \pm 0.99 _{a,B}
	48	25.94 \pm 4.27 _{ab,A}	91.97 \pm 16.7 _{5^a,A}	15.12 \pm 0.62 _{b,A}	20.4 \pm 2.56 _{bc,A}	38.25 \pm 2.6 _{5^b,A}	47.99 \pm 10.7 _{ab,AB}	33.89 \pm 2.7 ^b _A	10.58 \pm 2.45 _{b,BCD}	75.09 \pm 4.1 _{7^b,A}	90.43 \pm 21.92 _{a,BCD}	48.33 \pm 14.75 _{a,B}	48.31 \pm 10.15 ^{a,A}	13.44 \pm 1.08 ^b _C	8.32 \pm 0.19 ^{b,A}	30.36 \pm 7.78 ^{b,B}	39.88 \pm 6.54 ^{ab,A}	57.58 \pm 0.08 _{a,ABC}
FOS WD	6	2.75 \pm 0.3 ^{b,C}	23.39 \pm 6.68 ^a _E	6.89 \pm 0.49 ^b _C	0.6 \pm 0.14 ^b _D	1.48 \pm 0.17 ^c _C	67.65 \pm 0.98 _{a,A}	30.87 \pm 2.93 _{b,B}	14.4 \pm 1.69 ^b _{BC}	61.81 \pm 2.5 _{8^{bc},A}	79.57 \pm 29.41 _{b,A}	12.45 \pm 0.82 ^a _E	50.57 \pm 10.88 ^{ab,ABC}	18.52 \pm 3 ^{a,BCD}	15.79 \pm 0.32 ^{a,A}	52.64 \pm 9.12 ^{a,CDE}	40.35 \pm 9.58 ^{ab,ABC} _C	72.28 \pm 9.47 _{a,A}
	12	3.41 \pm 0.16 ^a _B	4.17 \pm 0.24 ^{b,B}	9.9 \pm 0.75 ^{a,AB} _C	0.47 \pm 0.01 _{b,C}	2.47 \pm 0.14 ^a _{b,D}	47.73 \pm 2.45 _{b,A}	37.26 \pm 0.74 _{a,A}	17.07 \pm 1.46 _{a,A}	49.47 \pm 9.3 _{1^c,C}	80.65 \pm 19.12 _{b,A}	12.7 \pm 0.15 ^{a,B} _C	56.85 \pm 3.89 ^{ab,A}	20.19 \pm 1.27 ^a _A	11.82 \pm 1.08 ^{b,A}	58.42 \pm 3.12 ^{a,A}	43.77 \pm 1.23 ^{a,A}	62.31 \pm 1.39 _{ab,A}
	24	2.38 \pm 0.05 ^b _B	2.35 \pm 0.14 ^{b,B}	3.73 \pm 0.09 ^{c,C} _D	0.18 \pm 0.01 ^c _B	2.02 \pm 0.22 _{b,CD}	43.38 \pm 3.08 _{b,BC}	22.42 \pm 1.21 ^c _B	9.87 \pm 0.73 ^c _C	76.47 \pm 2.0 _{5^a,AB}	144.86 \pm 12.0 _{6^a,A}	7.4 \pm 0.91 ^{b,C}	42.61 \pm 1.04 ^{b,B}	14.61 \pm 0.49 ^a _D	7.77 \pm 1.02 ^{c,AB}	31.72 \pm 1.22 ^{b,BC}	34.86 \pm 1.19 ^{a,D}	49.67 \pm 1.71 _{b,CD}
	48	3.18 \pm 0.24 ^a _{b,B}	2.97 \pm 0.04 ^{b,B}	1.73 \pm 0.35 ^d _C	1.27 \pm 0.06 ^a _B	2.84 \pm 0.19 ^a _{BC}	26.71 \pm 5.14 ^c _{BC}	26.99 \pm 1.84 _{bc,B}	3.4 \pm 0.55 ^{d,E}	66.68 \pm 0.1 _{1^{ab},AB}	108 \pm 17.17 ^{ab} _{BCD}	6.07 \pm 1.33 ^{b,C}	65.25 \pm 12.42 ^{a,A}	21.43 \pm 4.55 ^a _A	5.71 \pm 0.96 ^{c,BC}	37.46 \pm 2.45 ^{b,AB}	43.19 \pm 6.71 ^{a,A}	54.78 \pm 3.91 _{b,ABC}
FO CD	6	27.41 \pm 1.11 _{a,A}	46.53 \pm 3.23 ^b _{BCD}	31.9 \pm 1.61 ^a _A	39.08 \pm 2.8 _{9^a,A}	43.7 \pm 2.13 _{a,A}	37.98 \pm 0.92 _{b,D}	39.72 \pm 1.99 _{a,A}	16.69 \pm 0.38 _{a,BC}	40.33 \pm 2.8 _{1^b,DE}	14.04 \pm 0.93 ^c _B	23.95 \pm 0.29 ^b _{a,ABCD}	49.21 \pm 4.12 ^{ab,ABC}	18.94 \pm 1.23 ^b _{BCD}	8.97 \pm 0.21 ^{a,DEF}	55.72 \pm 3.59 ^{a,BCD}	40.24 \pm 4.14 ^{ab,AB} _C	57.01 \pm 5.83 _{b,BC}
	12	25.99 \pm 7.08 _{a,A}	84.64 \pm 26.0 _{7^a,A}	14.32 \pm 4.04 _{b,A}	33.84 \pm 7.5 _{8^a,A}	46.06 \pm 6.3 _{8^a,A}	40.2 \pm 6.36 ^{ab} _{a,ABC}	38.26 \pm 8.38 _{a,A}	17.19 \pm 2.92 _{a,A}	77.35 \pm 19.88 ^{a,AB}	28.21 \pm 1.53 ^b _B	28.63 \pm 1.77 ^a _A	54.54 \pm 8.78 ^{a,AB}	13.87 \pm 2.22 ^c _{BC}	5.1 \pm 1.34 ^{b,CD}	48.48 \pm 7.67 ^{ab,AB} _C	41.44 \pm 8.37 ^{ab,A}	64.33 \pm 10.4 _{1^{ab},A}
	24	3.78 \pm 0.23 ^b _B	83.83 \pm 3.16 ^a _A	7.87 \pm 0.83 ^{c,B}	0.55 \pm 0.04 _{b,B}	4.49 \pm 0.69 _{b,B}	50.16 \pm 2.28 _{a,ABC}	4.7 \pm 0.33 ^{b,CD}	11.96 \pm 1.27 _{b,BC}	82.59 \pm 11.79 ^{a,A}	49.11 \pm 3.86 ^a _{CD}	30.41 \pm 0.89 ^a _B	60.81 \pm 2.27 ^{a,A}	24.02 \pm 0.43 ^a _A	6.83 \pm 1.25 ^{ab,AB} _C	47.47 \pm 1.39 ^{ab,A}	53.93 \pm 0.91 ^{a,A}	77.19 \pm 2.58 _{ab,A}
	48	3.09 \pm 0.13 ^b _B	84.36 \pm 8.34 ^a _A	1.72 \pm 0.34 ^d _C	0.32 \pm 0.13 _{b,B}	3.45 \pm 0.23 _{b,B}	49.47 \pm 5.65 _{ab,A}	2.91 \pm 0.16 ^b _C	10.7 \pm 1.47 ^b _{BCD}	66.08 \pm 0.0 _{8^{ab},AB}	26.57 \pm 0.39 ^b _D	21.83 \pm 1.37 ^b _C	59.65 \pm 1.12 ^{a,A}	15.5 \pm 0.4 ^{c,BC}	4.85 \pm 0.62 ^{b,BCD}	42.11 \pm 2.66 ^{b,A}	45.08 \pm 2.91 ^{ab,A}	63.45 \pm 2.68 _{ab,A}
Fish oil WD	6	3.56 \pm 0.15 ^a _C	57.55 \pm 2.24 ^a _{AB}	9.68 \pm 2.47 ^a _C	0.13 \pm 0.00 ^c _D	1.88 \pm 0.18 ^a _C	53.38 \pm 11.3 _{4^{ab},BC}	3.23 \pm 0.33 ^a _C	21.57 \pm 1.73 _{a,B}	52.14 \pm 1.4 _{7^b,ABC}	22.88 \pm 2.69 ^b _B	21.55 \pm 2.71 ^a _{ABCD}	63.08 \pm 1.35 ^{a,A}	24.45 \pm 1.63 ^a _A	12.21 \pm 1.36 ^{a,BC}	72.76 \pm 3.71 ^{a,A}	48.93 \pm 2.03 ^{a,A}	71.22 \pm 1.99 _{a,A}

	12	3.17±0.02 ^a _B	83.17±13.3 ^a ₇	5.12±0.41 ^b _{BCED}	0.73±0.07 _{b,C}	1.01±0.14 _{b,D}	47.92±6.93 _{ab,A}	2.85±0.48 ^a _B	15.68±1.75 _{b,AB}	59.85±8.9 _{2^a,BC}	17.14±1.38 ^b _B	11.86±0.82 ^b _{BC}	53.23±4.88 ^{a,AB}	16.28±1.27 ^b _{ABC}	6.16±0.74 ^{b,BC}	51.49±1.14 ^{b,AB}	37.61±2.14 ^{a,AB}	62.31±1.15 _{b,A}
	24	3.08±0.42 ^a _{b,B}	75.94±2.00 ^a _A	3.97±0.4 ^{b,CD}	0.14±0.03 ^c _B	1.36±0.07 _{b,CD}	57.26±1.97 _{a,A}	2.54±0.45 ^{a,E}	18.45±0.82 _{ab,A}	79.99±1.7 _{3^a,A}	72.74±12.25 _{ab,BC}	9.82±0.99 ^{b,C}	48.31±0.14 ^{a,AB}	16.43±0.44 ^b _D	4.71±0.2 ^{b,CD}	33.51±1.67 ^{c,BC}	41.86±1.03 ^{a,BC}	57.94±1.47 _{b,BC}
	48	1.93±0.78 ^b _B	87.93±21.0 _{9^a,A}	5.62±0.52 ^b _B	1.14±0.16 ^a _B	1.07±0.27 _{b,BC}	33.98±6.62 _{b,ABC}	3.59±1.21 ^a _C	15.71±2.2 ^b _A	74.3±4.15 _{b,A}	130.73±64.2 _{3^a,BC}	4.77±1.23 ^{c,C}	60.48±14.35 ^{a,A}	12.41±1.68 ^c _{CD}	2.03±0.46 ^{c,F}	36.02±2.01 ^{c,AB}	45.37±8.9 ^{a,A}	52.15±1.92 _{c,BCD}
Pomegranate oil CD	6	29.38±1.46 _{a,A}	37.27±4.87 ^b _D	33.12±11.5 _{4^a,A}	32.08±4.4 _{8^a,B}	36.12±4.9 _{3^a,B}	34.46±4.11 _{b,D}	34.08±6.05 _{a,AB}	16.59±2.7 ^a _{BC}	33.26±2.3 _{b,E}	12.14±2.21 ^c _B	21.3±2.79 ^{a,A} _{BCD}	39.35±6.44 ^{b,C}	18.12±2.9 ^{a,B} _{CD}	8.09±1.91 ^{a,EF}	49.29±7.36 ^{a,D}	29.77±5.14 ^{a,C}	51.45±0.16 _{a,C}
	12	24.99±1.28 _{b,A}	70.02±5.73 ^a _A	11.14±2.47 _{b,A}	1.4±0.02 ^{b,C}	19.92±4.0 _{8^b,C}	34.49±4.76 _{b,ABC}	26.17±11.6 _{9^a,A}	9.28±0.79 ^c _C	65.17±5.4 _{7^a,BC}	33.09±7.37 ^b _B	20.57±4.09 ^a _{AB}	50.89±7.9 ^{a,AB}	16.24±3.3 ^{a,A} _{BC}	3.98±0.53 ^{b,D}	40.51±6.27 ^{a,BC}	40.78±8.41 ^{a,AB}	58.86±8 ^{a,AB}
	24	2.91±0.12 ^c _B	76.02±5.06 ^a _A	4.38±0.29 ^b _{CD}	0.26±0.01 _{b,B}	3.3±0.79 ^{c,B} _C	54.73±2.7 ^a _{AB}	3.43±0.23 ^b _{DE}	11.79±1.36 _{ab,AB}	67.87±4.2 _{2^a,AB}	22.83±3.25 ^b _{c,E}	3.51±0.35 ^{b,C}	45.83±4.04 ^{ab,B}	21.13±1.6 ^{a,A} _B	4.56±0.42 ^{b,CD}	42.46±4.78 ^{a,A}	39.57±2.17 ^{a,CD}	61.9±3.72 ^a _B
	48	2.61±0.3 ^{c,B}	79.31±14.7 _{3^a,A}	1.79±0.14 ^b _B	0.29±0.07 _B	3.38±0.13 ^c _B	44.86±4.6 ^{ab} _{AB}	2.78±0.42 ^b _C	13.77±0.92 _{ab,AB}	66.85±6.8 _{3^a,AB}	51.49±7.87 ^a _{BCD}	18±1.86 ^{c,A}	56.55±3.1 _A	15.2±0.39 ^{a,B} _C	2.37±0.56 ^{b,EF}	39.75±2.48 ^{a,AB}	42.52±0.48 ^{a,A}	60.99±2.23 _{a,AB}
Pomegranate oil WD	6	3.46±0.38 ^a _C	57.54±6.85 ^b _{AB}	10.3±0.76 ^a _C	0.62±0.08 _{b,D}	1.65±0.11 ^a _C	61.89±6.11 _{a,AB}	1±0.15 ^{b,C}	20.78±1.18 _{a,B}	52.45±3.2 _{6^b,ABC}	24.47±1.44 ^b _B	20.47±1.67 ^a _{ABCD}	59.37±5.03 ^{a,AB}	22.5±1.47 ^{a,A} _B	14.13±0.47 ^{a,AB}	65.6±6.88 ^{a,ABC}	46.33±3.4 ^{a,AB}	68.56±5.56 _{a,AB}
	12	2.2±0.04 ^{b,B}	62.71±3.8 ^{ab} _A	2.58±0.52 ^{c,E}	0.2±0.01 ^{c,C}	1.5±0.01 ^b _D	47.72±0.48 _{b,A}	1.58±0.27 ^b _B	14.49±0.54 _{b,AB}	65.96±6.19 _{b,BC}	22.58±1.51 ^b _B	13.09±2.2 ^{b,B} _C	48.56±0.64 ^{a,BC}	14.89±0.39 ^b _{BC}	3.57±0.25 ^{b,D}	38.89±6.89 ^{b,BC}	33.58±0.96 ^{a,AB}	53.38±2.25 _{ab,B}
	24	3.32±0.71 ^a _{b,B}	76.03±6.29 ^a _{b,A}	3.59±0.92 ^{b,c} _{cd}	0.19±0.03 ^c _B	1.38±0.21 ^a _{CD}	58.53±2.37 _{a,A}	3.1±0.02 ^{a,DE}	19.11±0.57 _{a,A}	83.47±5.1 _{a,A}	32.72±3.94 ^b _{DE}	9.09±0.34 ^{c,C}	49.52±2.43 ^{a,AB}	16.12±0.38 ^b _D	3.95±0.32 ^{b,D}	28.33±0.31 ^{b,C}	44.38±1.06 ^{a,BC}	60.02±0.59 _{ab,B}
	48	2.5±0.29 ^{ab} _B	82.01±11.0 _{9^a,A}	5.32±0.82 ^b _B	1.19±0.09 ^a _B	1.61±0.35 ^a _{BC}	20.74±1.26 ^c _C	2.88±0.77 ^a _C	11.4±1.03 ^c _{ABC}	61.41±6.4 _{8^b,B}	135.17±67.3 _{4^a,AB}	4.14±0.88 ^{d,C}	56.73±9.75 ^{a,A}	19.62±2.76 ^a _{AB}	2.91±0.58 ^{b,DEF}	33.33±3.51 ^{b,AB}	43.62±9.19 ^{a,AB}	44.09±5.62 _{c,D}
Fish oil+Pomegranate oil CD	6	17.79±2.03 _{a,B}	69.42±6.64 ^b _A	12.71±0.51 _{a,BC}	25.78±2.9 _{1^a,C}	34.94±4.2 _{7^a,B}	43.71±4.98 _{a,CD}	30.58±2.16 _{g,B}	11.8±3.34 ^{ab} _C	59.58±8.9 _{3^a,AB}	18.65±4.80 ^b _B	17.82±4.06 ^a _{BCDE}	41.27±5.71 ^{b,C}	14.41±1.9 ^{b,D}	6.39±1.09 ^{ab,F}	39.79±5.22 ^{a,E}	33.5±5.49 ^{b,B}	54.06±8.21 _{a,BC}
	12	19.84±1.31 _{a,A}	55.47±6.29 ^b _A	10.56±2.02 _{g,AB}	1.89±0.76 _{b,C}	25.93±6.9 _{5^a,BC}	27.19±5.1 ^b _C	24.75±4.83 _{a,A}	8.91±2.18 ^a _{b,C}	51.2±7.49 _{a,C}	20.75±4.58 ^b _B	18.28±1.92 ^a _B	42.35±0.51 ^{b,B}	13.21±0.77 ^b _{BC}	4.56±0.59 ^{b,CD}	40.04±5.28 ^{a,BC}	31.92±0.68 ^{b,AB}	51.81±3.94 _{a,AB}
	24	2.84±0.5 ^{b,B}	75.17±11.8 _{3^{ab},A}	2.9±0.23 ^{b,D}	0.37±0.04 _{b,B}	4.32±0.44 _{b,B}	44.14±6.95 _{a,BC}	5.83±0.74 ^b _C	8.95±0.45 ^a _{b,C}	56.33±14.78 ^{a,B}	44.17±4.15 ^a _{DE}	3.73±0.03 ^{b,C}	45.29±5.03 ^{b,B}	22.4±1.49 ^{a,A} _B	6.93±1.2 ^{a,ABC}	48.11±1.44 ^{a,A}	39.24±2.28 ^{ab,C} _D	62.53±3.17 _{a,B}
	48	3.13±0.12 ^b _B	94.39±6.58 ^a _A	2.2±0.33 ^{b,C}	0.52±0.2 ^b _B	2.78±0.36 _{b,BC}	41.56±6.02 _{ab,ABC}	2.05±0.7 ^{b,C}	6.03±0.53 ^b _D	75.44±4.0 _{6^a,A}	44.64±5.65 ^a _{BCD}	13.74±2.97 ^a _C	61.09±1.13 ^{a,A}	16.47±1.82 ^b _{ABC}	4.25±0.35 ^{a,ABC}	42.5±4.08 ^{a,A}	46.81±2.37 ^{a,A}	61.6±3.93 ^a _A
Fish oil+Pomegranate oil WD	6	3.42±0.14 ^a _C	51.56±2.74 ^c _{BC}	10.29±1.15 _{a,C}	0.28±0.12 _{b,D}	2.29±0.07 ^a _C	45.18±1.58 _{a,CD}	1.55±0.41 ^b _C	19.04±1.76 _{a,BC}	47.02±3.3 _{9^c,CD}	20.22±1.57 ^c _B	22.55±0.31 ^b _{AB}	59.3±3.7 _{6^a,AB}	23.91±0.66 ^a _A	11.34±0.64 ^{b,CD} _E	70.39±4.52 ^{a,AB}	48.14±4.9 ^{a,A}	67.14±0.00 _{5^a,AB}
	12	2.47±0.5 ^{ab} _B	64.16±4.47 ^b _A	3.38±0.33 ^b _{DE}	0.23±0.01 _{b,C}	1.51±0.11 _{b,D}	41.44±2.34 _{a,AB}	1.49±0.25 ^b _B	12.27±0.74 _{a,BC}	66.97±4.2 _{b,BC}	22.64±2.22 ^c _B	16.02±1.45 ^b _{BC}	52±4.02 ^{ab} _{AB}	15.82±0.3 ^{b,A} _{BC}	4.72±0.72 ^{b,CD}	34.94±1.03 ^{b,C}	34.42±1.69 ^{b,AB}	52.61±0.31 _{c,AB}
	24	3.55±0.75 ^b _B	82.92±6.23 ^a _A	3.96±0.9 ^{b,CD}	0.55±0.02 ^b _B	1.03±0.03 ^c _D	51.02±8.92 _{a,ABC}	2.61±0.19 ^{a,E}	12.68±1.69 _{b,BC}	81.71±5.1 _{a,A}	46.82±5.91 ^b _{DE}	8.51±0.69 ^{b,C}	50.49±1.91 ^{b,AB}	16.13±1.3 ^{b,D}	5.74±0.64 ^{b,BCD}	28.26±1.04 ^{c,C}	45.21±0.3 ^b _B	63.39±0.65 _{b,B}
	48	2.05±0.08 ^b _B	1.74±0.26 ^{d,B}	2.27±0.5 ^{b,C}	1.44±0.38 ^a _B	0.81±0.17 ^c _C	25.76±3.23 _{b,BC}	<0.05	8.78±0.23 ^c _{CD}	13.68±0.3 _{3^d,D}	72.19±14.63 _{a,BCD}	103.07±19.3 _{2^a,A}	4.61±0.9 _{8^b,B}	3.35±0.69 ^{c,E}	<0.05	34.68±2.96 ^{b,AB}	44.49±8.15 ^{a,A}	52.15±1.92 _{c,BCD}