

Electronic Supplementary Information (ESI)

Table S1: Concentration of fatty acids in red blood cells during the $_{lo}LA/_{hi}ALA$ diet and $_{hi}LA/_{lo}ALA$ diet at baseline (day 0), after seven days (day 7) and after 14 days (day 14).

Day 0							Day 7							Day 14							2-fact. An reM ^b		
loLA/hiALA			hiLA/loALA			t-test ^a	loLA/hiALA			hiLA/loALA			t-test ^a	loLA/hiALA			hiLA/loALA			t-test ^a			
	mean	±	SE	mean	±	SE	p (day 0- day 0)	mean	±	SE	mean	±	SE	p (day 1- day 1)	mean	±	SE	mean	±	SE		p (day 2- day 2)	p
C10:0	μg/mL	<0.25		<0.25			-	<0.25			<0.25			-	<0.25			<0.25			-	-	
	% of total FA	-		-			-	-			-			-	-			-			-	-	
C11:0	μg/mL	<0.25		<0.25			-	<0.25			<0.25			-	<0.25			<0.25			-	-	
	% of total FA	-		-			-	-			-			-	-			-			-	-	
C12:0	μg/mL	<0.25		<0.25			-	<0.25			<0.25			-	<0.25			<0.25			-	-	
	% of total FA	-		-			-	-			-			-	-			-			-	-	
C13:0	μg/mL	<0.25		<0.25			-	<0.25			<0.25			-	<0.25			<0.25			-	-	
	% of total FA	-		-			-	-			-			-	-			-			-	-	
C14:0	μg/mL	3.31	±	0.16	3.07	±	0.17	n.s.	3.15	±	0.17	3.06	±	0.12	n.s.	2.78	±	0.21	3.53	±	0.21	0.001	n.s.
	% of total FA	0.32	±	0.02	0.31	±	0.01	n.s.	0.31	±	0.01	0.32	±	0.01	n.s.	0.30	±	0.02	0.34	±	0.01	0.001	n.s.
C14:1n5	μg/mL	<0.25		<0.25			-	<0.25			<0.25			-	<0.25			<0.25			-	-	
	% of total FA	-		-			-	-			-			-	-			-			-	-	
C15:0	μg/mL	1.59	±	0.08	1.51	±	0.05	n.s.	1.61	±	0.06	1.51	±	0.05	n.s.	1.37	±	0.07	1.70	±	0.07	0.002	n.s.
	% of total FA	0.15	±	0.01	0.15	±	0.00	n.s.	0.16	±	0.00	0.16	±	0.00	n.s.	0.15	±	0.01	0.16	±	0.01	0.008	n.s.
C15:1n5	μg/mL	<0.25		<0.25			-	<0.25			<0.25			-	<0.25			<0.25			-	-	
	% of total FA	-		-			-	-			-			-	-			-			-	-	
C16:0	μg/mL	212	±	7.22	200	±	4.48	n.s.	209	±	5.89	194	±	4.23	0.024	184	±	6.24	218	±	6.47	<0.001	n.s.
	% of total FA	20.4	±	0.18	20.1	±	0.13	n.s.	20.7	±	0.13	20.5	±	0.11	0.002	19.8	±	0.18	21.0	±	0.13	<0.001	0.006
C16:1n7	μg/mL	2.88	±	0.18	2.87	±	0.13	n.s.	3.11	±	0.32	2.98	±	0.16	n.s.	2.89	±	0.37	3.67	±	0.47	0.025	n.s.

	% of total FA	0.28 ± 0.02	0.29 ± 0.01	n.s.	0.30 ± 0.02	0.32 ± 0.02	n.s.	0.31 ± 0.03	0.35 ± 0.04	n.s.	n.s.
C17:0	µg/mL	3.10 ± 0.12	2.96 ± 0.09	n.s.	3.07 ± 0.08	2.87 ± 0.06	0.031	2.76 ± 0.08	3.10 ± 0.08	0.004	n.s.
	% of total FA	0.30 ± 0.01	0.30 ± 0.01	n.s.	0.31 ± 0.01	0.30 ± 0.01	n.s.	0.30 ± 0.01	0.30 ± 0.01	n.s.	n.s.
C17:1n8	µg/mL	<0.25	<0.25	-	<0.25	<0.25	-	<0.25	<0.25	-	-
	% of total FA	-	-	-	-	-	-	-	-	-	-
C18:0	µg/mL	157 ± 4.53	151 ± 3.50	n.s.	154 ± 3.82	142 ± 3.20	0.030	141 ± 3.85	154 ± 4.25	0.01	n.s.
	% of total FA	15.2 ± 0.18	15.3 ± 0.10	n.s.	15.3 ± 0.13	15.1 ± 0.12	0.026	15.2 ± 0.15	14.8 ± 0.15	n.s.	n.s.
C18:1n9	µg/mL	139 ± 4.78	130 ± 2.65	n.s.	130 ± 4.69	121 ± 2.56	0.046	117 ± 5.25	133 ± 5.29	0.01	n.s.
	% of total FA	13.4 ± 0.18	13.1 ± 0.20	n.s.	12.8 ± 0.21	12.8 ± 0.18	n.s.	12.6 ± 0.25	12.7 ± 0.25	n.s.	n.s.
C18:1n7	µg/mL	14.5 ± 0.59	13.8 ± 0.34	n.s.	14.3 ± 0.42	13.5 ± 0.30	n.s.	13.5 ± 0.33	15.2 ± 0.53	0.003	n.s.
	% of total FA	1.40 ± 0.02	1.39 ± 0.02	n.s.	1.42 ± 0.02	1.44 ± 0.02	n.s.	1.45 ± 0.02	1.46 ± 0.03	n.s.	n.s.
C18:2n6	µg/mL	101 ± 3.78	99.1 ± 2.89	n.s.	91.6 ± 2.59	94.5 ± 2.92	n.s.	82.8 ± 2.75	110 ± 3.51	<0.001	<0.001
	% of total FA	9.72 ± 0.20	9.99 ± 0.24	n.s.	9.12 ± 0.19	10.0 ± 0.23	<0.001	8.90 ± 0.15	10.6 ± 0.22	<0.001	<0.001
C18:3n6	µg/mL	<0.25	<0.25	-	<0.25	<0.25	-	<0.25	<0.25	-	-
	% of total FA	-	-	-	-	-	-	-	-	-	-
C19:0	µg/mL	<0.25	<0.25	-	<0.25	<0.25	-	<0.25	<0.25	-	-
	% of total FA	-	-	-	-	-	-	-	-	-	-
C18:3n3	µg/mL	1.44 ± 0.17	1.47 ± 0.13	n.s.	5.63 ± 0.45	1.09 ± 0.09	<0.001	6.34 ± 0.63	1.41 ± 0.17	<0.001	<0.001
	% of total FA	0.14 ± 0.02	0.15 ± 0.01	n.s.	0.55 ± 0.03	0.12 ± 0.01	<0.001	0.67 ± 0.05	0.13 ± 0.01	<0.001	<0.001
C18:4n3	µg/mL	<0.25	<0.25	-	<0.25	<0.25	-	<0.25	<0.25	-	-
	% of total FA	-	-	-	-	-	-	-	-	-	-
C20:0	µg/mL	3.87 ± 0.14	4.06 ± 0.11	n.s.	3.92 ± 0.12	3.70 ± 0.13	n.s.	3.71 ± 0.14	3.95 ± 0.15	n.s.	n.s.
	% of total FA	0.37 ± 0.01	0.41 ± 0.01	0.012	0.39 ± 0.01	0.39 ± 0.01	n.s.	0.40 ± 0.01	0.38 ± 0.01	n.s.	n.s.
C20:1n9	µg/mL	2.86 ± 0.21	2.73 ± 0.13	n.s.	2.79 ± 0.13	2.57 ± 0.13	0.004	2.52 ± 0.10	2.87 ± 0.12	0.002	n.s.
	% of total FA	0.27 ± 0.01	0.28 ± 0.01	n.s.	0.28 ± 0.01	0.27 ± 0.01	n.s.	0.27 ± 0.01	0.28 ± 0.01	n.s.	n.s.
C20:2n6	µg/mL	2.00 ± 0.12	1.89 ± 0.08	n.s.	1.87 ± 0.10	1.85 ± 0.09	n.s.	1.62 ± 0.07	2.21 ± 0.11	<0.001	0.001
	% of total FA	0.19 ± 0.01	0.19 ± 0.01	n.s.	0.19 ± 0.01	0.20 ± 0.01	0.049	0.18 ± 0.01	0.21 ± 0.01	0.004	0.001
C20:3n9	µg/mL	<0.25	<0.25	-	<0.25	<0.25	-	<0.25	<0.25	-	-
	% of total FA	-	-	-	-	-	-	-	-	-	-
C20:3n6	µg/mL	15.9 ± 0.93	14.5 ± 0.82	n.s.	14.1 ± 0.96	14.1 ± 0.82	n.s.	12.9 ± 0.94	15.9 ± 0.89	<0.001	n.s.

	% of total FA	1.53 ± 0.07	1.47 ± 0.08	n.s.	1.39 ± 0.08	1.50 ± -	0.003	1.38 ± 0.10	1.54 ± 0.09	<0.001	n.s.
C21:0	µg/mL	<0.25	<0.25	-	<0.25	<0.25	-	<0.25	<0.25	-	-
	% of total FA	-	-	-	-	-	-	-	-	-	-
C20:4n6	µg/mL	152 ± 4.08	145 ± 4.10	n.s.	147 ± 3.61	138 ± 3.33	0.047	139 ± 3.16	151 ± 3.86	0.007	n.s.
	% of total FA	14.7 ± 0.18	14.6 ± 0.19	n.s.	14.7 ± 0.20	14.7 ± 0.14	n.s.	15.0 ± 0.27	14.6 ± 0.20	0.043	n.s.
C20:3n3	µg/mL	<0.25	<0.25	-	<0.25	<0.25	-	<0.25	<0.25	-	-
	% of total FA	-	-	-	-	-	-	-	-	-	-
C20:4n3	µg/mL	<0.25	<0.25	-	<0.25	<0.25	-	<0.25	<0.25	-	-
	% of total FA	-	-	-	-	-	-	-	-	-	-
C20:5n3	µg/mL	5.49 ± 0.48	5.86 ± 0.41	n.s.	6.97 ± 0.55	5.21 ± 0.35	<0.001	8.27 ± 0.82	5.11 ± 0.41	<0.001	0.001
	% of total FA	0.53 ± 0.04	0.59 ± 0.04	n.s.	0.69 ± 0.05	0.55 ± 0.04	<0.001	0.88 ± 0.08	0.49 ± 0.03	<0.001	<0.001
C22:0	µg/mL	16.6 ± 0.36	16.5 ± 0.55	n.s.	16.5 ± 0.54	15.28 ± 0.54	n.s.	15.5 ± 0.49	16.6 ± 0.51	0.007	n.s.
	% of total FA	1.61 ± 0.04	1.66 ± 0.04	n.s.	1.64 ± 0.03	1.62 ± 0.03	n.s.	1.66 ± 0.04	1.60 ± 0.04	n.s.	n.s.
C22:1n9	µg/mL	1.56 ± 0.20	2.03 ± 0.20	0.022	2.08 ± 0.28	1.83 ± 0.21	n.s.	1.94 ± 0.34	1.30 ± 0.12	n.s.	n.s.
	% of total FA	0.15 ± 0.02	0.21 ± 0.02	0.003	0.20 ± 0.03	0.19 ± 0.02	n.s.	0.21 ± 0.04	0.13 ± 0.01	n.s.	n.s.
C22:2n6	µg/mL	<0.25	<0.25	-	<0.25	<0.25	-	<0.25	<0.25	-	-
	% of total FA	-	-	-	-	-	-	-	-	-	-
C22:4n6	µg/mL	32.5 ± 1.58	29.5 ± 0.92	0.048	30.7 ± 1.21	28.58 ± 1.25	0.020	27.9 ± 1.11	30.4 ± 1.13	0.024	0.017
	% of total FA	3.13 ± 0.11	2.98 ± 0.11	0.003	3.06 ± 0.11	3.03 ± 0.11	n.s.	3.01 ± 0.11	2.93 ± 0.09	n.s.	0.013
C22:5n6	µg/mL	5.84 ± 0.35	5.12 ± 0.24	0.026	5.49 ± 0.34	5.04 ± 0.29	n.s.	5.11 ± 0.32	5.42 ± 0.25	n.s.	0.014
	% of total FA	0.56 ± 0.03	0.52 ± 0.02	0.010	0.54 ± 0.03	0.53 ± 0.03	n.s.	0.55 ± 0.03	0.52 ± 0.02	n.s.	0.008
C22:5n3	µg/mL	27.3 ± 1.42	28.0 ± 0.98	n.s.	27.1 ± 1.05	27.0 ± 0.91	n.s.	27.1 ± 1.34	27.9 ± 1.51	n.s.	n.s.
	% of total FA	2.62 ± 0.09	2.82 ± 0.09	0.005	2.70 ± 0.09	2.87 ± 0.08	0.015	2.91 ± 0.10	2.67 ± 0.10	<0.001	n.s.
C24:0	µg/mL	47.1 ± 1.14	46.7 ± 1.11	n.s.	45.9 ± 1.21	44.0 ± 1.36	n.s.	44.1 ± 1.29	46.6 ± 1.48	n.s.	n.s.
	% of total FA	4.56 ± 0.06	4.70 ± 0.06	0.050	4.56 ± 0.05	4.65 ± 0.07	0.022	4.75 ± 0.06	4.48 ± 0.08	0.002	n.s.
C22:6n3	µg/mL	36.1 ± 1.75	34.3 ± 2.04	n.s.	35.8 ± 1.75	32.4 ± 1.75	0.006	35.8 ± 1.44	35.7 ± 1.74	n.s.	0.025
	% of total FA	3.50 ± 0.15	3.44 ± 0.16	n.s.	3.56 ± 0.16	3.42 ± 0.15	0.050	3.87 ± 0.16	3.44 ± 0.16	<0.001	0.012
C24:1n9	µg/mL	51.9 ± 2.42	49.9 ± 1.45	n.s.	50.7 ± 1.73	47.7 ± 1.66	0.027	49.1 ± 1.34	49.9 ± 1.64	n.s.	0.050
	% of total FA	4.99 ± 0.13	5.03 ± 0.11	n.s.	5.04 ± 0.11	5.04 ± 0.11	n.s.	5.30 ± 0.14	4.81 ± 0.12	<0.001	n.s.
ΣTFA	µg/mL	1040 ± 30.9	996 ± 20.6	n.s.	1010 ± 25.9	947 ± 20.6	0.050	933 ± 25.8	1043 ± 28.2	0.004	n.s.

ΣSFA µg/mL	446 ± 13.1	428 ± 9.33	n.s.	438 ± 11.1	408 ± 9.05	0.033	396 ± 11.5	449 ± 12.3	0.002	n.s.
% of total FA	42.9 ± 0.30	42.9 ± 0.15	n.s.	43.4 ± 0.13	43.0 ± 0.14	<0.001	42.5 ± 0.18	43.1 ± 0.19	0.008	n.s.
ΣMUFA µg/mL	213 ± 7.87	202 ± 4.06	n.s.	203 ± 6.87	190 ± 4.23	0.040	188 ± 6.85	206 ± 7.00	0.016	n.s.
% of total FA	20.5 ± 0.31	20.3 ± 0.25	n.s.	20.1 ± 0.27	20.1 ± 0.21	n.s.	20.1 ± 0.32	19.7 ± 0.26	n.s.	n.s.
ΣPUFA µg/mL	381 ± 11.0	367 ± 8.40	n.s.	369 ± 8.72	350 ± 7.94	n.s.	349 ± 8.62	387 ± 9.65	0.006	n.s.
% of total FA	36.7 ± 0.19	36.8 ± 0.23	n.s.	36.5 ± 0.20	36.9 ± 0.16	0.006	37.5 ± 0.28	37.2 ± 0.19	0.037	n.s.
Σn3 PUFA µg/mL	71.1 ± 3.00	70.4 ± 2.83	n.s.	76.7 ± 2.96	66.5 ± 2.46	0.001	78.9 ± 3.34	70.9 ± 3.05	n.s.	0.001
of total FA	6.79 ± 0.20	7.00 ± 0.20	n.s.	7.55 ± 0.20	6.96 ± 0.19	<0.001	8.42 ± 0.26	6.73 ± 0.20	<0.001	<0.001
Σn6 PUFA µg/mL	310 ± 9.07	296 ± 6.60	n.s.	292 ± 6.85	283 ± 6.40	n.s.	270 ± 6.58	316 ± 7.45	<0.001	n.s.
% of total FA	29.9 ± 0.27	29.8 ± 0.27	n.s.	29.0 ± 0.27	29.9 ± 0.22	<0.001	29.0 ± 0.35	30.4 ± 0.24	<0.001	<0.001
Σn6/Σn3 PUFA	4.42 ± 0.16	4.27 ± 0.15	n.s.	3.86 ± 0.14	4.31 ± 0.15	<0.001	3.48 ± 0.15	4.54 ± 0.16	<0.001	<0.001
ΣEPA+DHA µg/mL	41.6 ± 2.04	40.2 ± 2.27	n.s.	42.8 ± 2.04	37.6 ± 1.95	0.001	44.1 ± 1.96	40.8 ± 1.91	n.s.	0.005
% of total FA	4.03 ± 0.17	4.03 ± 0.18	n.s.	4.25 ± 0.18	3.97 ± 0.17	<0.001	4.76 ± 0.20	3.93 ± 0.17	<0.001	0.001

Levels are shown as concentration [µg/mL] in blood and as relative amount [%] of total fatty acids.

DHA, Docosahexaenoic acid; EPA, Eicosapentaenoic acid; MUFA, monounsaturated fatty acids: C14:1n5, C15:1n5, C16:1n7, C17:1n7, C18:1n9, C18:1n7, C20:1n9, C22:1n9, 24:1n9; SFA, saturated fatty acids: C10:0, C11:0, C12:0, C13:0, C14:0, C15:0, C16:0, C17:0, C18:0, C20:0, C21:0, C22:0, C24:0; PUFA, Polyunsaturated fatty acids: C18:2n6, C18:3n6, C18:3n3, C:18:4n3, C20:2n6, C20:3n3, C20:3n6, C20:3n9, C20:4n3, C20:4n6, C20:5n3, C22:2n6, C22:4n6, C22:5n3, C22:5n6, C22:6n3; TFA, Total fatty acids; Σn3 PUFA, polyunsaturated fatty acids: C18:3n3, C:18:4n3, C20:3n3, C20:4n3, C20:5n3, C22:5n3, C22:6n3; Σn6 PUFA: C18:2n6, C18:3n6, C20:2n6, C20:3n6, C20:4n6, C22:2n6, C22:4n6, C22:5n6.

^a t-test for paired samples (between interventions), significance level p≤0.05

^b two-factorial ANOVA for repeated measures (An reM); significance level p≤0.05