

Supplementary Table S1. Adjusted and unadjusted mixed-effects models showing the relationship between red blood cell and dietary fatty acids and inflammatory markers.

	Unadjusted		Simple Adjustment ^(a)		Multiple Adjustments ^(b)	
	β (95% CI)	p-value	β (95% CI)	p-value	β (95% CI)	p-value
IL-6 & Fatty Acids						
RBC - SFA	0.25 (-0.09, 0.60)	0.15	0.19 (-0.16, 0.54)	0.29	-0.08 (-0.47, 0.31)	0.68
RBC - MUFA	-0.07 (-0.44, 0.29)	0.70	-0.05 (-0.42, 0.31)	0.78	0.36 (-0.05, 0.78)	0.08
RBC - n-6 PUFA	-0.20 (-0.47, 0.07)	0.15	-0.19 (-0.46, 0.08)	0.17	-0.08 (-0.36, 0.20)	0.59
RBC - n-3 PUFA	0.13 (-0.22, 0.48)	0.46	0.17 (-0.18, 0.52)	0.33	-0.05 (-0.41, 0.30)	0.77
RBC - n-3 Index	0.06 (-0.34, 0.45)	0.76	0.11 (-0.28, 0.50)	0.59	-0.13 (-0.51, 0.25)	0.50
Dietary Saturated Fat intake	0.03 (-0.01, 0.07)	0.11	0.03 (-0.01, 0.07)	0.15	0.03 (-0.02, 0.07)	0.22
Dietary monounsaturated fat intake	0.00 (-0.04, 0.05)	0.88	0.00 (-0.05, 0.04)	0.89	0.01 (-0.03, 0.06)	0.59
Dietary polyunsaturated fat intake	-0.03 (-0.17, 0.11)	0.67	-0.05 (-0.19, 0.08)	0.46	0.01 (-0.14, 0.16)	0.91
Dietary n-3 intake	0.00 (-0.003, 0.002)	0.55	0.00 (-0.003, 0.002)	0.62	0.00 (-0.003, 0.002)	0.66
TNF-α & RBC Fatty Acids						
RBC - SFA	0.02 (-0.02, 0.05)	0.44	0.00 (-0.04, 0.04)	0.93	0.00 (-0.05, 0.04)	0.85
RBC - MUFA	0.01 (-0.05, 0.06)	0.81	0.02 (-0.04, 0.07)	0.54	0.03 (-0.04, 0.09)	0.39
RBC - n-6 PUFA	-0.01 (-0.05, 0.03)	0.51	-0.01 (-0.05, 0.03)	0.71	0.00 (-0.04, 0.04)	0.95
RBC - n-3 PUFA	-0.02 (-0.07, 0.04)	0.61	-0.01 (-0.07, 0.05)	0.79	-0.02 (-0.09, 0.04)	0.50
RBC - n-3 Index	-0.02 (-0.09, 0.04)	0.46	-0.01 (-0.09, 0.05)	0.66	-0.03 (-0.10, 0.04)	0.44
Dietary Saturated Fat intake	0.01 (0.001, 0.01)	0.02	0.01 (0.001, 0.01)	0.03	0.001 (0.001, 0.01)	0.02
Dietary monounsaturated fat intake	0.00 (-0.002, 0.01)	0.21	0.00 (-0.003, 0.01)	0.30	0.00 (-0.003, 0.01)	0.28
Dietary polyunsaturated fat intake	0.00 (-0.01, 0.02)	0.63	0.00 (-0.01, 0.02)	0.78	0.01 (-0.01, 0.02)	0.55
Dietary n3 intake	0.00 (-0.0004, 0.0002)	0.46	0.00 (-0.0004, 0.0002)	0.48	0.00 (-0.001, 0.0002)	0.20
CRP & RBC Fatty Acids						
RBC - SFA	0.55 (0.06, 1.05)	0.03	0.51 (0.01, 1.02)	0.047	0.30 (-0.27, 0.88)	0.30
RBC - MUFA	-0.88 (-1.37, -0.39)	<0.001*	-0.87 (-1.37, -0.38)	<0.001*	-0.59 (-1.26, 0.09)	0.09
RBC - n-6 PUFA	-0.07 (-0.48, 0.34)	0.73	-0.06 (-0.47, 0.35)	0.77	-0.07 (-0.54, 0.41)	0.79
RBC - n-3 PUFA	0.34 (-0.18, 0.86)	0.20	0.38 (-0.15, 0.90)	0.16	0.21 (-0.41, 0.83)	0.51
RBC - n-3 Index	0.46 (-0.12, 1.04)	0.12	0.51 (-0.07, 1.09)	0.08	0.35 (-0.32, 1.02)	0.31
Dietary Saturated Fat intake	-0.02 (-0.08, 0.04)	0.52	-0.02 (-0.08, 0.04)	0.48	-0.02 (-0.09, 0.05)	0.64
Dietary monounsaturated fat intake	-0.04 (-0.11, 0.02)	0.18	-0.05 (-0.11, 0.01)	0.13	-0.02 (-0.10, 0.05)	0.52

Dietary polyunsaturated fat intake	-0.21 (-0.40, -0.01)	0.04	-0.23 (-0.42, -0.03)	0.02	-0.12 (-0.35, 0.12)	0.33
Dietary n-3 Intake	-0.003 (-0.01, 0.001)	0.09	-0.003 (-0.01, 0.001)	0.10	-0.003 (-0.01, 0.001)	0.15

Data is presented for mixed effects models with beta-coefficients, 95% CI and p-values. Findings with $p < 0.05$ are considered statistically significant and bolded.

(a) adjusted for time only

(b) adjusted for age, BMI, sex, time, intake of anti-inflammatory supplements, inflammatory conditions and smoking status

* Remained significant when adjusting for multiple testing using Bonferroni correction.

CRP, C-reactive protein; IL-6, interleukin 6; MUFA, monounsaturated fatty acids; n-3, omega-3; PUFA, polyunsaturated fatty acids; RBC, red blood cell; SFA, saturated fatty acids; TNF- α , tumour necrosis factor α .

Supplementary Table S2: Adjusted and unadjusted mixed-effects models showing the relationship between individual red blood cell membrane fatty acids and inflammatory markers.

	Unadjusted		Adjusted ^(a)		Adjusted ^(b)	
	β (95% CI)	p-value	β (95% CI)	p-value	β (95% CI)	p-value
IL-6 & Fatty Acids						
C14:0	.18	0.81	.04	0.95	-.75	0.33
C16:0	.32	0.24	.19	0.50	-.10	0.71
C18:0	.42	0.14	.34	0.24	-.17	0.59
C18:1n-9	-.17	0.48	-.19	0.42	-.02	0.93
C18:1n-7	.68	0.39	.83	0.29	1.61	0.04
C18:2n-6	-.20	0.35	-.20	0.34	.14	0.50
C20:0	-1.53	0.30	-1.47	0.32	-1.22	0.39
C20:1n-9	-1.46	0.58	-1.91	0.46	-1.23	0.63
C20:2n-6	-1.65	0.49	-1.62	0.49	-.85	0.71
C20:3n-6	.35	0.27	.43	0.16	.63	0.04
C20:4n-6	-.13	0.44	-.15	0.38	-.25	0.15
C20:5n-3	.27	0.59	.50	0.32	.05	0.91
C22:0	-.16	0.83	.10	0.89	.66	0.39
C22:4n-6	-.86	0.048	-.90	0.04	-.89	0.04

C22:5n-3	.75	0.17	.77	0.15	.45	0.42
C22:6n-3	.03	0.89	.07	0.78	-.14	0.56
C24:0	-.09	0.80	0.00	0.99	.25	0.48
C24:1n-9	-.01	0.99	0.06	0.85	.42	0.18
TNF-α & RBC Fatty Acids						
C14:0	-.01	0.88	-.05	0.55	-.06	0.46
C16:0	.01	0.75	-.02	0.53	-.02	0.57
C18:0	.05	0.12	.03	0.38	-.01	0.87
C18:1n-9	.02	0.56	.02	0.57	.00	0.95
C18:1n-7 (Vaccenate)	.00	0.96	.03	0.76	.10	0.24
C18:2n-6	-.03	0.38	-.03	0.45	-.02	0.52
C20:0	-.07	0.64	-.05	0.74	-.05	0.76
C20:1n-9	.25	0.32	.19	0.44	.19	0.43
C20:2n-6	.20	0.38	.21	0.34	.22	0.30
C20:3n-6	-.01	0.89	.00	0.97	.05	0.21
C20:4n-6	.00	0.86	.01	0.77	.00	0.85
C20:5n-3	-.12	0.08	-.08	0.23	-.10	0.17
C22:0	-.10	0.18	-.08	0.33	-.04	0.61
C22:4n-6	-.11	0.12	-.11	0.11	-.10	0.18
C22:5n-3	.03	0.69	.02	0.72	.01	0.92
C22:6n-3	.01	0.88	.01	0.77	.00	0.94
C24:0	.01	0.79	.03	0.50	.05	0.24
C24:1n-9	-.02	0.67	.00	0.95	.03	0.47
CRP & RBC Fatty Acids						
C14:0	.48	0.66	.41	0.71	-.07	0.95
C16:0	1.27	0.001	1.19	0.002	.98	0.02
C18:0	.60	0.14	.55	0.19	-.07	0.89
C18:1n-9	-.42	0.23	-.44	0.22	-.11	0.79
C18:1n-7	-3.65	0.001	-3.53	0.001	-2.56	0.02

C18:2n-6	-.80	0.01	-.79	0.01	-.65	0.06
C20:0	-1.05	0.62	-1.14	0.59	-1.22	0.56
C20:1n-9	-2.25	0.55	-2.58	0.49	-1.73	0.63
C20:2n-6	-2.74	0.43	-2.63	0.44	-1.46	0.65
C20:3n-6	-.94	0.04	-.85	0.06	-.64	0.20
C20:4n-6	.61	0.01	.59	0.02	.41	0.13
C20:5n-3	.79	0.29	1.06	0.16	1.11	0.18
C22:0	-1.36	0.20	-1.04	0.34	-.49	0.67
C22:4n-6	.52	0.45	.47	0.49	.55	0.46
C22:5n-3	-.31	0.70	-.34	0.68	-.77	0.39
C22:6n-3	.57	0.13	.61	0.10	.36	0.37
C24:0	-.39	0.42	-.35	0.48	-.08	0.88
C24:1n-9	-1.03	0.02	-1.01	0.02	-.55	0.26

Data is presented for mixed effects models with beta-coefficients, 95% CI and p-values. Findings with $p < 0.05$ are considered statistically significant and bolded.

(a) adjusted for time only

(b) adjusted for age, BMI, sex, time, intake of anti-inflammatory supplements, inflammatory conditions and smoking status
CRP, C-reactive protein; IL-6, interleukin 6; RBC, red blood cell; TNF- α , tumour necrosis factor α .