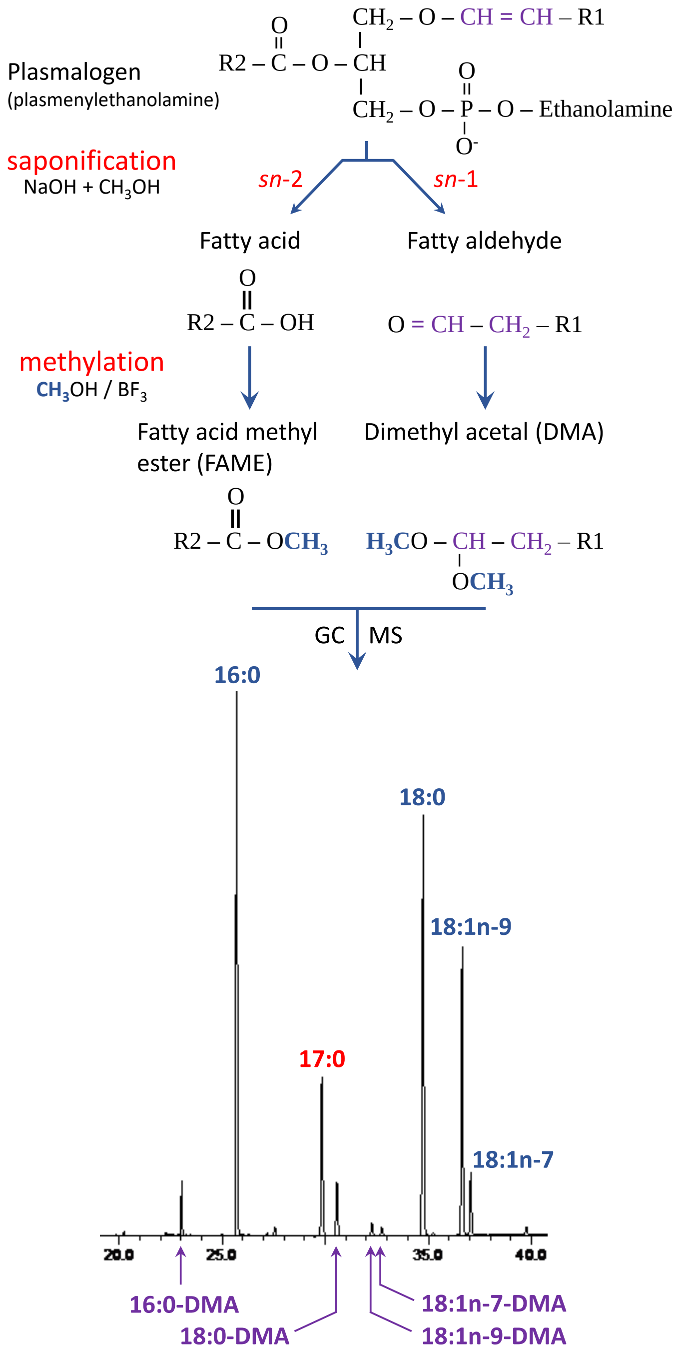
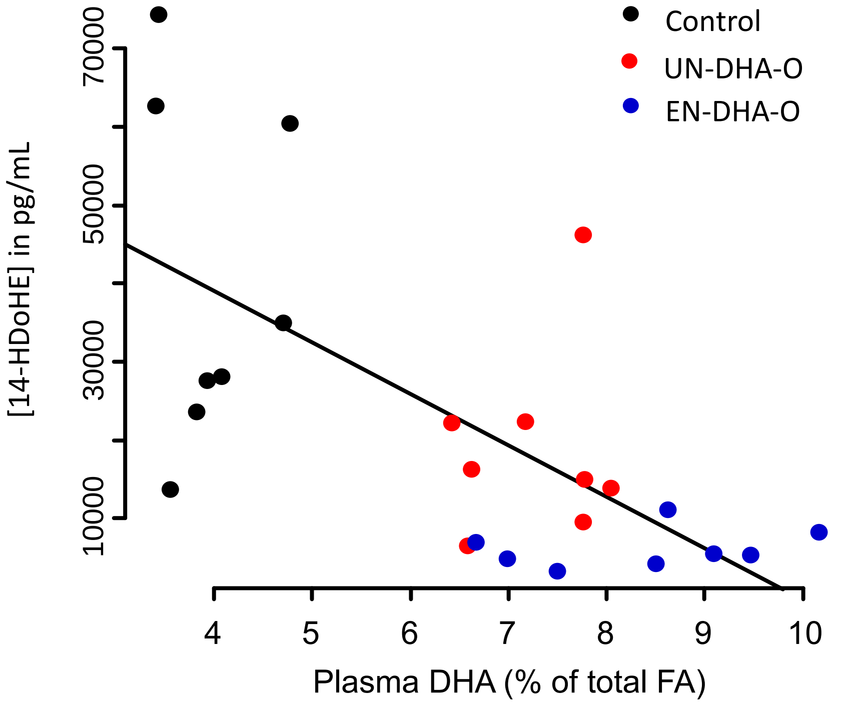


Supplemental Figure 1. Dimethylacetal formation from plasmalogens after saponification and methylation.



Plasma [14-HDoHE] = -6508 Plasma DHA % + 65203

$R^2 = 0.4177$ ***

Supplemental Figure 2. Correlation between 14-HDoHE concentrations in plasma and DHA proportions in plasma.

Pearson correlation was determined from plasma measurements of DHA and 14-HDoHE from all the data. Omelets were identified by colored symbols.

Supplemental Table 1. The fatty acid profile of plasma and RBC.

Lipids of plasma and red blood cells were extracted by the Folch's method. The fatty acid profile was determined by GC-MS and expressed in mass %.

%	Plasma			RBC		
	Control	UN-DHA-O	EN-DHA-O	Control	UN-DHA-O	EN-DHA-O
12:0	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
14:0	0.5 ± 0.0	0.5 ± 0.0	0.5 ± 0.0	0.2 ± 0.0	0.2 ± 0.0	0.2 ± 0.0
16:0	21.0 ± 0.3 ^{a}	22.0 ± 0.3 ^{ab}	22.5 ± 0.2 ^{b}	27.5 ± 0.5	28.8 ± 0.3	28.1 ± 0.3
18:0	7.7 ± 0.1	7.5 ± 0.4	7.4 ± 0.1	11.0 ± 0.2	11.2 ± 0.1	11.6 ± 0.3
20:0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
22:0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
24:0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
saturated	**29.3 ± 0.3** ^{a}	**30.0 ± 0.1** ^{ab}	**30.4 ± 0.2** ^{b}	**38.7 ± 0.6** ^{a}	**40.2 ± 0.2** ^{b}	**39.9 ± 0.2** ^{ab}
16:1n-7	3.2 ± 0.1	2.9 ± 0.2	2.9 ± 0.1	0.8 ± 0.1 ^{a}	0.5 ± 0.0 ^{b}	0.5 ± 0.0 ^{b}
18:1n-7	2.5 ± 0.1 ^{a}	2.0 ± 0.1 ^{b}	2.0 ± 0.1 ^{b}	3.2 ± 0.0 ^{a}	3.0 ± 0.1 ^{b}	3.0 ± 0.1 ^{b}
20:1n-7	0.2 ± 0.0	0.2 ± 0.0	0.1 ± 0.0	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
n-7	**5.9 ± 0.1** ^{a}	**5.1 ± 0.2** ^{b}	**5.0 ± 0.1** ^{b}	**4.1 ± 0.1** ^{a}	**3.5 ± 0.1** ^{b}	**3.5 ± 0.1** ^{b}
16:1n-9	0.2 ± 0.0	0.2 ± 0.0	0.2 ± 0.0	0.1 ± 0.0	0.1 ± 0.0	0.1 ± 0.0
18:1n-9	18.6 ± 0.5	19.0 ± 0.8	19.6 ± 0.4	9.4 ± 0.3	9.3 ± 0.2	8.8 ± 0.2
20:1n-9	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.0	0.1 ± 0.0	0.1 ± 0.0
20:2n-9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
20:3n-9	0.2 ± 0.0 ^{a}	0.1 ± 0.0 ^{b}	0.1 ± 0.0 ^{b}	0.1 ± 0.0	0.1 ± 0.0	0.1 ± 0.0
22:1n-9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
24:1n-9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
n-9	**19.1 ± 0.5**	**19.3 ± 0.8**	**19.9 ± 0.4**	**9.7 ± 0.3**	**9.6 ± 0.2**	**9.1 ± 0.2**
18:2n-6	11.1 ± 0.2	11.7 ± 0.1	11.1 ± 0.3	7.0 ± 0.2	7.4 ± 0.1	7.0 ± 0.2
18:3n-6	0.1 ± 0.0	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
20:2n-6	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.0	0.2 ± 0.0	0.2 ± 0.0
20:3n-6	0.3 ± 0.0	0.4 ± 0.0	0.4 ± 0.0	0.6 ± 0.0	0.6 ± 0.0	0.6 ± 0.0
20:4n-6	28.3 ± 0.7 ^{a}	23.5 ± 1.0 ^{b}	21.9 ± 0.3 ^{b}	31.5 ± 0.2 ^{a}	28.3 ± 0.2 ^{b}	28.8 ± 0.2 ^{b}
22:4n-6	0.2 ± 0.0 ^{a}	0.0 ± 0.0 ^{b}	0.1 ± 0.0 ^{b}	1.3 ± 0.0 ^{a}	0.8 ± 0.0 ^{b}	0.8 ± 0.0 ^{b}
22:5n-6	0.2 ± 0.0 ^{a}	0.1 ± 0.0 ^{b}	0.1 ± 0.0 ^{b}	0.5 ± 0.0 ^{a}	0.3 ± 0.0 ^{b}	0.3 ± 0.0 ^{b}
n-6	**40.2 ± 0.5** ^{a}	**35.8 ± 1.0** ^{b}	**33.6 ± 0.3** ^{b}	**41.0 ± 0.4** ^{a}	**37.6 ± 0.2** ^{b}	**37.7 ± 0.2** ^{b}
18:3n-3	0.6 ± 0.0	0.6 ± 0.0	0.6 ± 0.0	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
20:5n-3	0.5 ± 0.0 ^{a}	1.4 ± 0.1 ^{b}	1.4 ± 0.1 ^{b}	0.3 ± 0.0 ^{a}	0.9 ± 0.0 ^{b}	0.9 ± 0.0 ^{b}
22:5n-3	0.4 ± 0.0 ^{a}	0.6 ± 0.1 ^{b}	0.8 ± 0.1 ^{b}	1.7 ± 0.1 ^{a}	1.9 ± 0.1 ^{ab}	2.0 ± 0.0 ^{b}
22:6n-3	3.9 ± 0.2 ^{a}	7.2 ± 0.2 ^{b}	8.3 ± 0.4 ^{b}	4.2 ± 0.1 ^{a}	6.1 ± 0.1 ^{b}	6.7 ± 0.1 ^{c}
n-3	**5.4 ± 0.2** ^{a}	**9.8 ± 0.3** ^{b}	**11.1 ± 0.5** ^{b}	**6.3 ± 0.1** ^{a}	**8.9 ± 0.1** ^{b}	**9.6 ± 0.1** ^{c}
others	**0.1 ± 0.0**	**0.0 ± 0.0**	**0.0 ± 0.0**	**0.2 ± 0.0**	**0.2 ± 0.0**	**0.2 ± 0.0**
μg/mg	1.9 ± 0.1	1.9 ± 0.1	2.0 ± 0.1	2.2 ± 0.0	2.1 ± 0.0	2.2 ± 0.0

Supplemental Table 2. The fatty acid profile of liver and heart.

Lipids were extracted by the Folch's method. The fatty acid profile was determined by GC-MS and expressed in mass %.

%	Liver			Heart		
	Control	UN-DHA-O	EN-DHA-O	Control	UN-DHA-O	EN-DHA-O
12:0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
14:0	0.5 ± 0.0 ^{a}	0.4 ± 0.0 ^{b}	0.5 ± 0.0 ^{ab}	0.1 ± 0.0	0.1 ± 0.0	0.1 ± 0.0
16:0	22.1 ± 0.4 ^{a}	22.3 ± 0.5 ^{a}	24.2 ± 0.4 ^{b}	11.3 ± 0.1	11.9 ± 0.2	11.9 ± 0.2
18:0	10.4 ± 0.4	11.3 ± 0.7	10.7 ± 0.8	20.6 ± 0.4	20.1 ± 0.3	20.4 ± 0.5
20:0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
22:0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
24:0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
saturated	**33.0 ± 0.4**	**34.0 ± 0.6**	**35.4 ± 0.8**	**32.0 ± 0.4**	**32.1 ± 0.4**	**32.4 ± 0.5**
16:1n-7	3.7 ± 0.2 ^{a}	2.7 ± 0.2 ^{b}	3.4 ± 0.3 ^{a}	0.4 ± 0.0	0.4 ± 0.0	0.3 ± 0.0
18:1n-7	3.6 ± 0.1 ^{a}	2.9 ± 0.1 ^{b}	3.0 ± 0.2 ^{b}	3.7 ± 0.0	3.5 ± 0.1	3.7 ± 0.1
20:1n-7	0.1 ± 0.0	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
n-7	**7.4 ± 0.2** ^{a}	**5.7 ± 0.3** ^{b}	**6.4 ± 0.4** ^{ab}	**4.1 ± 0.1**	**3.9 ± 0.1**	**4.0 ± 0.1**
16:1n-9	0.3 ± 0.0	0.3 ± 0.0	0.3 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
18:1n-9	22.6 ± 0.9	20.6 ± 1.0	23.0 ± 1.3	5.6 ± 0.1	6.1 ± 0.3	5.1 ± 0.3
20:1n-9	0.1 ± 0.0	0.1 ± 0.0	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
20:2n-9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
20:3n-9	0.2 ± 0.0	0.1 ± 0.0	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
22:1n-9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
24:1n-9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
n-9	**23.2 ± 0.9**	**21.1 ± 1.1**	**23.5 ± 1.3**	**5.6 ± 0.1**	**6.1 ± 0.3**	**5.1 ± 0.3**
18:2n-6	9.3 ± 0.3	10.0 ± 0.2	8.6 ± 0.4	15.1 ± 0.4 ^{a}	13.1 ± 0.4 ^{b}	12.4 ± 0.5 ^{b}
18:3n-6	0.1 ± 0.0	0.1 ± 0.0	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
20:2n-6	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
20:3n-6	0.4 ± 0.0	0.5 ± 0.0	0.4 ± 0.0	0.2 ± 0.0	0.3 ± 0.0	0.3 ± 0.0
20:4n-6	18.9 ± 0.8 ^{a}	17.3 ± 0.7 ^{ab}	15.5 ± 0.9 ^{b}	27.2 ± 0.3 ^{a}	22.7 ± 0.6 ^{b}	22.6 ± 0.5 ^{b}
22:4n-6	0.2 ± 0.0 ^{a}	0.1 ± 0.0 ^{b}	0.1 ± 0.0 ^{b}	0.7 ± 0.0 ^{a}	0.3 ± 0.0 ^{b}	0.4 ± 0.0 ^{b}
22:5n-6	0.2 ± 0.0 ^{a}	0.1 ± 0.0 ^{b}	0.1 ± 0.0 ^{b}	0.9 ± 0.1 ^{a}	0.4 ± 0.0 ^{b}	0.5 ± 0.0 ^{b}
n-6	**29.2 ± 0.8** ^{a}	**28.1 ± 0.8** ^{a}	**24.8 ± 0.9** ^{b}	**44.1 ± 0.4** ^{a}	**36.8 ± 0.3** ^{b}	**36.0 ± 0.5** ^{b}
18:3n-3	0.5 ± 0.0	0.6 ± 0.0	0.5 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
20:5n-3	0.2 ± 0.0 ^{a}	0.9 ± 0.1 ^{b}	0.7 ± 0.1 ^{b}	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
22:5n-3	0.6 ± 0.0	0.7 ± 0.0	0.7 ± 0.0	1.4 ± 0.1	1.4 ± 0.0	1.5 ± 0.1
22:6n-3	5.8 ± 0.4 ^{a}	8.8 ± 0.3 ^{b}	7.9 ± 0.4 ^{c}	12.8 ± 0.3 ^{a}	19.7 ± 0.5 ^{b}	21.0 ± 0.3 ^{b}
n-3	**7.1 ± 0.4** ^{a}	**11.0 ± 0.3** ^{b}	**9.8 ± 0.4** ^{c}	**14.2 ± 0.4** ^{a}	**21.1 ± 0.5** ^{b}	**22.5 ± 0.4** ^{b}
others	**0.1 ± 0.0**	**0.1 ± 0.0**	**0.1 ± 0.0**	**0.0 ± 0.0**	**0.0 ± 0.0**	**0.0 ± 0.0**
µg/mg	46.2 ± 2.0	44.3 ± 2.2	49.9 ± 4.3	19.8 ± 0.4	20.3 ± 0.5	20.3 ± 0.4

Supplemental Table 3. The fatty acid profile of brain and eyes.

Lipids were extracted by the Folch's method. The fatty acid profile was determined by GC-MS and expressed in mass %.

%	Brain			Eyes		
	Control	UN-DHA-O	EN-DHA-O	Control	UN-DHA-O	EN-DHA-O
12:0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.0
14:0	0.1 ± 0.0	0.1 ± 0.0	0.1 ± 0.0	1.0 ± 0.0 ^{a}	1.1 ± 0.0 ^{ab}	1.2 ± 0.0 ^{b}
16:0	21.3 ± 0.3	20.9 ± 0.3	20.9 ± 0.3	18.7 ± 0.2 ^{a}	21.0 ± 0.2 ^{b}	21.4 ± 0.3 ^{b}
18:0	19.7 ± 0.5	18.9 ± 0.4	18.7 ± 0.6	17.2 ± 0.4	16.4 ± 0.4	17.3 ± 0.8
20:0	0.1 ± 0.0	0.1 ± 0.0	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
22:0	0.1 ± 0.0	0.1 ± 0.0	0.1 ± 0.0	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
24:0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
saturated	**41.3 ± 0.5**	**40.1 ± 0.5**	**39.9 ± 0.8**	**37.0 ± 0.5** ^{a}	**38.5 ± 0.4** ^{b}	**40.0 ± 0.8** ^{b}
16:1n-7	0.3 ± 0.0	0.4 ± 0.0	0.4 ± 0.0	2.4 ± 0.2	2.5 ± 0.1	3.3 ± 0.3
18:1n-7	3.4 ± 0.1	3.4 ± 0.1	3.3 ± 0.1	3.3 ± 0.0	3.2 ± 0.0	3.2 ± 0.1
20:1n-7	0.2 ± 0.0	0.2 ± 0.0	0.2 ± 0.0	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
n-7	**3.9 ± 0.1**	**4.0 ± 0.1**	**3.9 ± 0.1**	**5.8 ± 0.2**	**5.7 ± 0.2**	**6.5 ± 0.4**
16:1n-9	0.1 ± 0.0	0.1 ± 0.0	0.1 ± 0.0	0.3 ± 0.0 ^{a}	0.2 ± 0.0 ^{b}	0.2 ± 0.0 ^{b}
18:1n-9	13.8 ± 0.3	15.0 ± 0.5	14.3 ± 0.4	13.2 ± 0.4	13.7 ± 0.3	14.1 ± 0.6
20:1n-9	0.6 ± 0.0	0.7 ± 0.1	0.7 ± 0.0	0.2 ± 0.0 ^{a}	0.1 ± 0.0 ^{b}	0.1 ± 0.0 ^{b}
20:2n-9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
20:3n-9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.2 ± 0.0	0.1 ± 0.0	0.1 ± 0.0
22:1n-9	0.1 ± 0.0	0.1 ± 0.0	0.1 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
24:1n-9	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
n-9	**14.6 ± 0.3**	**15.9 ± 0.6**	**15.2 ± 0.4**	**13.9 ± 0.4**	**14.1 ± 0.3**	**14.5 ± 0.6**
18:2n-6	0.4 ± 0.0	0.4 ± 0.0	0.4 ± 0.0	2.0 ± 0.1	1.9 ± 0.1	2.2 ± 0.2
18:3n-6	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
20:2n-6	0.0 ± 0.0	0.0 ± 0.0	0.1 ± 0.0	0.1 ± 0.0 ^{a}	0.0 ± 0.0 ^{b}	0.0 ± 0.0 ^{b}
20:3n-6	0.2 ± 0.0	0.3 ± 0.0	0.3 ± 0.0	0.3 ± 0.0 ^{a}	0.2 ± 0.0 ^{b}	0.2 ± 0.0 ^{b}
20:4n-6	12.7 ± 0.2	12.2 ± 0.2	12.3 ± 0.3	13.3 ± 0.2 ^{a}	11.8 ± 0.2 ^{b}	10.9 ± 0.2 ^{c}
22:4n-6	3.3 ± 0.1	3.2 ± 0.1	3.2 ± 0.1	1.9 ± 0.0 ^{a}	1.2 ± 0.0 ^{b}	1.1 ± 0.0 ^{b}
22:5n-6	0.7 ± 0.0 ^{a}	0.5 ± 0.0 ^{b}	0.5 ± 0.0 ^{b}	0.5 ± 0.0 ^{a}	0.1 ± 0.0 ^{b}	0.1 ± 0.0 ^{b}
n-6	**17.3 ± 0.4**	**16.6 ± 0.3**	**16.8 ± 0.4**	**18.1 ± 0.2** ^{a}	**15.2 ± 0.2** ^{b}	**14.5 ± 0.3** ^{b}
18:3n-3	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
20:5n-3	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0	0.0 ± 0.0
22:5n-3	0.1 ± 0.0	0.2 ± 0.0	0.2 ± 0.0	0.7 ± 0.0	0.7 ± 0.0	0.7 ± 0.0
22:6n-3	22.8 ± 0.3	23.2 ± 0.3	24.0 ± 0.5	24.4 ± 0.6	25.8 ± 0.3	23.8 ± 0.7
n-3	**22.9 ± 0.3**	**23.4 ± 0.3**	**24.2 ± 0.5**	**25.1 ± 0.6**	**26.5 ± 0.3**	**24.5 ± 0.7**
others	**0.0 ± 0.0**	**0.0 ± 0.0**	**0.0 ± 0.0**	**0.1 ± 0.0**	**0.0 ± 0.0**	**0.0 ± 0.0**
µg/mg	32.3 ± 0.9	33.1 ± 0.9	31.3 ± 0.8	4.1 ± 0.1	4.1 ± 0.1	3.9 ± 0.2