HOKKAIDO UNIVERSITY

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Supplemental Material

The Association of Prenatal Exposure to Perfluorinated Chemicals with Maternal Essential and Long-Chain Polyunsaturated Fatty Acids during Pregnancy and the Birth Weight of their Offspring: The Hokkaido Study

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Table S1. The adjusted[a] least square means (LSMs) for the lipid levels by quartiles[b] of PFOS during pregnancy (n=306).

Exposure	N	Crude LSMs (95% CI)	Adjusted LSMs (95% CI)
TG (mg/dL)			
Quartile 1	77	Reference	Reference
Quartile 2	72	-13.1 (-26.6, 0.3)	-10.1 (-25.1, 4.7)
Quartile 3	80	-25.5 (-37.9, -13.1)	-19.5 (-33.2, -5.8)
Quartile 4	77	-22.2 (-34.9, -9.5)	-16.1 (-30.5, -1.7)
p for trend		**<.001**	**<.003**
Palmitic acid (μg/mL)			
Quartile 1	77	Reference	Reference
Quartile 2	72	-312.2 (-560.2, -64.3)	-246.6 (-544.3, 51.0)
Quartile 3	80	-505.6 (-738.2, -272.9)	-441.2 (-716.0, -166.4)
Quartile 4	77	-470.1 (-706.2, -233.9)	-422.1 (-706.9, -13.7.3)
p for trend		**<.001**	**<.001**
Palmitoleic acid (μg/mL)			
Quartile 1	77	Reference	Reference
Quartile 2	72	-26.2 (-47.3, -5.2)	-19.0 (-43.4, 5.3)
Quartile 3	80	-38.4 (-58.2, -18.6)	-31.2 (-53.7, -8.7)
Quartile 4	77	-40.7 (-60.5, -20.9)	-32.4 (-55.5, -9.4)
p for trend		**<.001**	**<.001**
Stearic acid (μg/mL)			
Quartile 1	77	Reference	Reference
Quartile 2	72	-19.4 (-76.5, 37.5)	-9.7 (78.7, 59.3)
Quartile 3	80	-6.6 (-62.8, 49.5)	-7.4 (-73.3, 58.5)
Quartile 4	77	8.7 (-48.8, 66.2)	-4.7 (-73.6, 64.1)
p for trend		0.671	0.900
Oleic acid (μg/mL)			
Quartile 1	77	Reference	Reference
Quartile 2	72	-188.4 (-348.5, -28.3)	-139.2 (-326.3, 47.8)
Quartile 3	80	-310.0 (-459.8, -160.3)	-247.4 (-420.3, -74.6)
Quartile 4	77	-276.6 (-429.3, -123.9)	-217.5 (-398.0, -37.0)
p for trend		**<.001**	**0.002**
Linoleic acid (μg/mL)			
Quartile 1	77	Reference	Reference
Quartile 2	72	-55.7 (-253.1, 141.6)	-73.0 (-333.7, 187.5)
Quartile 3	80	-306.9 (-471.8, -141.9)	-347.8 (-556.1, -129.4)
Quartile 4	77	-331.4 (-494.9, -168.0)	-373.6 (-593.4, -153.7)
p for trend		**<.001**	**<0.001**
α-Linolenic acid (μg/mL)			
Quartile 1	77	Reference	Reference
Quartile 2	72	-1.4 (-4.4, 1.5)	-1.7 (-5.7, 2.2)
Quartile 3	80	-4.1 (-6.8, -1.5)	-4.7 (-8.2,-1.2)
Quartile 4	77	-4.6 (-7.2, -2.0)	-5.2 (-8.6, -1.7)
p for trend		**<.001**	**<.001**
Arachidonic acid (μg/mL)			
Quartile 1	77	Reference	Reference
Quartile 2	72	1.7 (-15.5, 19.0)	-0.6 (-24.1, 22.9)
Quartile 3	80	-12.9 (-28.0, 2.0)	-19.3 (-39.4, 0.7)
Quartile 4	77	-17.8 (-32.4, -3.1)	-24.9 (-44.9, -5.0)
p for trend		0.003	**<.001**

Exposure	N	Crude LSMs (95% CI)	Adjusted LSMs (95% CI)
EPA[c] (μg/mL)			
Quartile 1	77	Reference	Reference
Quartile 2	72	1.5 (-0.4, 3.6)	1.4 (-1.1, 3.9)
Quartile 3	80	1.9 (-0.0, 4.0)	4.1 (-0.7, 4.0)
Quartile 4	77	1.3 (-0.5, 3.3)	0.9 (-1.4, 3.3)
p for trend		0.159	0.340
DHA[c] (μg/mL)			
Quartile 1	77	Reference	Reference
Quartile 2	72	4.0 (-3.0, 11.2)	3.5 (-6.7, 13.9)
Quartile 3	80	-0.4 (-6.7, 5.7)	-3.6 (-12.3, 5.0)
Quartile 4	77	-3.3 (-9.2, 2.5)	-6.4 (-15.0, 2.1)
p for trend		0.143	**<.03**
EFAs (μg/mL)			
Quartile 1	77	Reference	Reference
Quartile 2	72	-57.4 (-257.7, 142.8)	-75.2 (-339.8, 189.3)
Quartile 3	80	-311.4 (-478.9, -144)	-353.4 (-575.1, -131.6)
Quartile 4	77	-336.3 (-502.2, -170.3)	-379.5 (-602.8, -156.1)
p for trend		**<.001**	**<.001**
Omega 6 (μg/mL)			
Quartile 1	77	Reference	Reference
Quartile 2	72	-55.6 (-268.8, 157.4)	-75.2 (-357.3, 206.7)
Quartile 3	80	-322.2 (-500.9, -143.5)	-369.4 (-606.1, -132.7)
Quartile 4	77	-350.6 (-527.6, -173.7)	-399.7 (-637.9, -161.5)
p for trend		**<.001**	**<.001**
Omega 3[c] (μg/mL)			
Quartile 1	77	Reference	Reference
Quartile 2	72	3.9 (-5.8, 13.6)	3.0 (-9.9, 16.1)
Quartile 3	80	-1.0 (-9.9, 7.9)	-4.1 (-15.7, 7.4)
Quartile 4	77	-4.0 (-12.7, 4.6)	-7.3 (-19.0, 4.2)
p for trend		0.233	0.068

[a]Adjusted for maternal age, smoking and alcohol intake during pregnancy, annual household, parity, and blood sampling period (categorical). [b]Serum PFOS quartiles: quartile 1 (1.5-4 ng/mL), quartile 2 (4-5.6 ng/mL), quartile 3 (5.6-7.5 ng/mL), and quartile 4 (7.5-16.2 ng/mL). [c]For EPA, DHA and omega 3 FAs, adjusted model 1 and 2 also included fish intake.

After $\log_{10}$-transformation of PFOS and lipid levels (TG and fatty acids), PFOS levels were divided into four quartiles. Then, least square means (LSMs) and 95% confidence interval (CI) were calculated, and the LSMs and CIs were back transformed from $\log_{10}$ to normal values. *p* for trend were calculated by linear contrast.