

6th International Workshop on Immunonutrition, 15th–17th October 2012, Palma de Mallorca

Plasma inflammatory and vascular homeostasis biomarkers in newborns are not affected by mothers' oily fish intake

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The ingestion of (*n*-3) LC-PUFA may lower the concentrations of inflammatory biomarkers; therefore, we investigated whether the consumption of oily fish affects the levels of inflammatory cytokines and vascular adhesion factors in newborns.

Pregnant women (*n* = 123) were randomly assigned to continue their habitual diet (control group, *n* = 61), which was low in oily fish, or to consume two 150-g salmon portion per week (salmon group, *n* = 62) (providing 3.45 g EPA plus DHA) from 20 week gestation until delivery. Salmon for use in the study was raised using dietary ingredients selected to contain low levels of contaminants Plasma inflammatory cytokines and vascular adhesion factors were measured in maternal samples at 38 weeks of gestation and cord blood samples, collected immediately after delivery. Differences between mothers and newborns were evaluated by Student *t*-tests. Correlations were estimated by computing Pearson's correlation coefficient in the case of normally distributed values and the Spearman correlation coefficient in the case of other distributions, respectively. *P* values <0.05 were considered to be statistically significant. In the table, values are mean ± SEM. Significant differences between mothers and their newborns are indicated in the table with * and differences between groups with bold type. All statistical analyses were performed with the Statistical Package for Social Science 15.0 for Windows.

	Group			
	Control (<i>n</i> = 50)		Salmon (<i>n</i> = 51)	
	38 weeks	Newborn	38 weeks	Newborn
IL-8 (ng/L)	0.62 ± 0.04	7.45 ± 2.72	0.78 ± 0.09	2.74 ± 0.54*
IL-6 (ng/L)	1.04 ± 0.14	16.14 ± 8.11	1.84 ± 0.57	4.95 ± 1.26*
TNF-α (ng/L)	2.74 ± 0.21	16.92 ± 9.18	2.64 ± 0.18	6.77 ± 0.32*
MCP-1 (ng/L)	69 ± 5	222 ± 24*	76 ± 5	253 ± 36*
HGF (ng/L)	907 ± 101	7186 ± 492*	861 ± 98	6307 ± 461*
NGF (ng/L)	10.8 ± 2.0	12.0 ± 1.4	6.05 ± 1.15	11.21 ± 2.31*
sE-selectin (vg/L)	16.4 ± 1.4	77.3 ± 5.7*	17.50 ± 1.63	82.68 ± 6.13*
sICAM-1 (vg/L)	176 ± 28	81 ± 7*	121 ± 5	76 ± 3*
sVCAM-1 (mg/L)	1.00 ± 0.05	1.52 ± 0.07*	1.03 ± 0.05	1.66 ± 0.10*
tPAI-1(vg/L)	38.8 ± 2.3	53.9 ± 7.6	36.6 ± 3.2	52.8 ± 9.8
MMP-9 (vg/L)	101 ± 11	211 ± 22*	71 ± 8	198 ± 21*

Significant correlations were observed between maternal and cord plasma for MCP-1, NGF and sICAM-1, only in the control group (*P* ranging between <0.001 and 0.030).

Therefore, inflammatory and vascular homeostasis biomarkers in newborns are not affected by the increased intake of farmed salmon. This study was supported by the European Union Commission under Framework 6: Sustainable Aquafeeds to Maximize the Health Benefits of Farmed Fish for Consumers (AQUAMAX; FOOD-CT-2006-16249).