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Effect of supplementing pregnant and lactating mothers with n-3 very-long-chain fatty acids on children's IQ and body mass index at 7 years of age.

Helland IB, Smith L, Blomén B, Saarem K, Saugstad OD, Drevon CA.

Department of Nutrition, Institute of Basic Medical Sciences, Oslo, Norway.
ingrid.helland@rikshospitalet.no

OBJECTIVES: Arachidonic acid (20:4n-6) and docosahexaenoic acid (22:6n-3) are essential for brain growth and cognitive development. We have reported that supplementing pregnant and lactating women with n-3 very-long-chain polyunsaturated fatty acids promotes higher IQ scores at 4 years of age as compared with maternal supplementation with n-6 polyunsaturated fatty acids. In our present study, the children were examined at 7 years of age with the same cognitive tests as at 4 years of age. We also examined the relation between plasma fatty acid pattern and BMI in children, because an association between arachidonic acid and adipose tissue size has been suggested.

METHODS: The study was randomized and double-blinded. The mothers took 10 mL of cod liver oil or corn oil from week 18 of pregnancy until 3 months after delivery. Their children were tested with the Kaufman Assessment Battery for Children at 7 years of age, and their height and weight were measured.

RESULTS: We did not find any significant differences in scores on the Kaufman Assessment Battery for Children test at 7 years of age between children whose mothers had taken cod liver oil (n = 82) or corn oil (n = 61). We observed, however, that maternal plasma phospholipid concentrations of alpha-linolenic acid (18:3n-3) and docosahexaenoic acid during pregnancy were correlated to sequential processing at 7 years of age. We observed no correlation between fatty acid status at birth or during the first 3 months of life and BMI at 7 years of age.

CONCLUSION: This study suggests that maternal concentration of n-3 very-long-chain polyunsaturated fatty acids during pregnancy might be of importance for later cognitive function, such as sequential processing, although we observed no significant effect of n-3 fatty acid intervention on global IQs. Neonatal fatty acid status had no influence on BMI at 7 years of age