

Abstract

J Nutr. 2010 Feb 24. [Epub ahead of print]

Serum Phospholipid Docosahexaenonic Acid Is Associated with Cognitive Functioning during Middle Adulthood.

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BACKGROUND: Existing evidence links greater dietary intake of fish and (n-3) PUFA to better early brain development and lowered risk of cognitive disorders in late life. The mechanisms for these associations remain unclear and may be related to specific (n-3) fatty acids and may concern cognitive function generally rather than only early brain development and age-related cognitive dysfunction.

OBJECTIVE AND METHODS: In this investigation, we tested potential associations between (n-3) fatty acids in serum phospholipids and major dimensions of cognitive functioning in mid-life adults. Participants were 280 community volunteers between 35 and 54 y of age, free of major neuropsychiatric disorders, and not taking fish oil supplements. Dietary biomarkers were alpha-linolenic acid (ALA), eicosapentaenoic acid (EPA), and docosahexaenonic acid (DHA) in serum phospholipids measured using GC. Five major dimensions of cognitive functioning were assessed with a 75-min battery of neuropsychological tests.

RESULTS: In covariate adjusted regression models, higher DHA (mol %) was related to better performance on tests of nonverbal reasoning and mental flexibility, working memory, and vocabulary ($P \leq 0.05$). These associations were generally linear. Associations between DHA and nonverbal reasoning and working memory persisted with additional adjustment for participant education and vocabulary scores ($P \leq 0.05$). Neither EPA nor ALA was notably related to any of the 5 tested dimensions of cognitive performance. Among the 3 key (n-3) PUFA, only DHA is associated with major aspects of cognitive performance in nonpatient adults <55 y old.

CONCLUSIONS: These findings suggest that DHA is related to brain health throughout the lifespan and may have implications for clinical trials of neuropsychiatric disorders.

PMID: 20181791

