

# DHA-enriched formula in infancy linked to positive cognitive outcomes in childhood

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University of Kansas scientists have found that infants who were fed formula enriched with long-chain polyunsaturated fatty acids (LCPUFA) from birth to 12 months scored significantly better than a control group on several measures of intelligence conducted between the ages of three to six years.

Specifically, the children showed accelerated development on detailed tasks involving pattern discrimination, rule-learning and inhibition between the ages of three to five years of age as well as better performance on two widely-used [standardized tests](#) of intelligence: the Peabody Picture Vocabulary Test at age five and the Weschler Primary Preschool Scales of Intelligence at age six.

"These results support the contention that studies of nutrition and cognition should include more comprehensive and sensitive assessments that are administered multiple times through early childhood," said John Colombo, study director and KU professor of psychology.

The results of LCPUFA supplementation studies have been mixed according to Colombo, a neuroscientist who specializes in the measurement of early neurocognitive development, but many of those studies have relied mainly on children's performance on the Bayley Scales of Infant Development at 18 months.

In the randomized, double-blind study, 81 infants were fed one of four formulas from birth to 12 months; three with varying levels of two

LCPUFAs (DHA and ARA) and one formula with no LCPUFA. Beginning at 18 months, the children were tested every six months until six years of age on age-appropriate standardized and specific [cognitive tests](#).

At 18 months the children did not perform any better on standardized tests of performance and intelligence, but by age three study directors Colombo and Susan E. Carlson, A. J. Rice Professor of Dietetics and Nutrition at KUMC, began to see significant differences in the performance of children who were fed the enriched formulas on finer-grained, laboratory-based measures of several aspects of cognitive function.

DHA or docosahexaenoic acid is an essential long-chain fatty acid that affects brain and eye development, and babies derive it from their mothers before birth and up to age two. But the American diet is often deficient in DHA sources such as fish.

ARA or arachidonic acid is another LCPUFA that is present in breast milk and commercial formula.

The study was designed to examine the effects of postnatal DHA at levels that have been found to vary across the world, said study co-director Carlson.

The results on the children's development from the first 12 months of this study were published in *Pediatric Research* in 2011, and showed improved attention and lower heart rate in infants supplemented with any level of LCPUFA. Colombo and Carlson's earlier work and collaborations influenced infant formula manufacturers to begin adding DHA in 2001.

The study was published ahead of print in the June 2013 issue of the

*American Journal of Clinical Nutrition.*

Provided by University of Kansas

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