

Letter to the Editor

Why are we undertaking DHA supplementation studies in infants who are not DHA-deficient?

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Dear Editor,

A recurring feature of randomised controlled studies investigating the effects of DHA supplementation on cognitive function in infancy is that the variation in the DHA status of infants within each of the randomised groups is either not characterised or is not separately considered in the analysis of the study. This means that most publications reporting on the effect of DHA supplementation on cognitive function are including infants in the analysis who are not DHA-deficient. Moreover, it also means that there are very little data specifically on the effects of DHA supplementation on DHA-deficient infants. The study by Meldrum *et al.*⁽¹⁾ continues this pattern of investigating the effects of DHA supplementation in infants with above-average DHA status on entry to the study. The cohort was recruited from an affluent and educated community; maternal nutrition included oily fish and mothers were also able to take fish oil supplements; more than 98% of infants were breast fed and if infant formula was used, a formula fortified with long-chain PUFA was most commonly chosen. This abundance of DHA in maternal and infant nutritional intake was reflected in the high erythrocyte DHA levels in infants at birth and at 6 months of age. These DHA-enriched infants were randomised to a high-dose fish oil supplement. The outcome was that supplementation with DHA was not associated with significant differences between the infant intervention and control groups in the standard or composite scores of the Bayley Scales of Infant and Toddler Development or the Child Behaviour Checklist. There was a positive effect on one subset of the MacArthur–Bates Communicative Development Inventory relating to late gestures; however, this outcome was parent-reported and the authors acknowledge that 92% of mothers had correctly identified the fish oil supplement.

The authors of this study concluded that the results suggest that improved postnatal *n*-3 long-chain-PUFA intake in the first 6 months of life using high-dose infant fish oil supplementation was not beneficial to global infant neurodevelopment. With the risk that this may be the only sentence read by researchers, policymakers and the media, it would have been preferable if they had qualified their conclusion by underlining that the mothers and infants in their study were unusually well endowed with DHA through their DHA-enriched dietary intakes, and in those relatively unusual circumstances it may be that additional high-dose DHA supplementation will not confer measurable improvements in cognition during infancy.

The Meldrum study raises a more general question and that is why are we continuing to undertake DHA supplementation studies on infants who are DHA rich – and is this a research priority? Despite nearly 20 years of intensive investigation of the role

of DHA in the development and function of the human brain, there remain fundamental gaps in our knowledge of the impact that DHA may have on the health and well-being of the childhood population. In particular, there are the related issues of clarity on the optimum DHA requirements for normal development in term and preterm infants, consensus on definitions of normal DHA status, and agreement on the optimum dose and duration of DHA supplementation in the at-risk mother, infant and child.

Would it not be more informative to study the effects of DHA supplementation in cohorts that are known to be relatively deficient in DHA? Priority could be given to groups that are high risk for both DHA deficiency and the impairment of cognitive function. This would include preterm and small-for-gestation infants, low-income families in both the developed and developing world and infants and children with a family history of developmental and behavioural conditions such as developmental coordination disorder, dyslexia, and attention deficit hyperactivity disorder which are becoming increasingly prevalent and cause considerable health and social debility. Research in these areas is currently very limited.

Finally, it is important to maximise the research potential that is committed to DHA research and, in particular, to effectively translate the impressive laboratory data into the clinical setting. Clinical studies being undertaken across the world should be steadily building on our knowledge and understanding of the role of DHA in the childhood population. Lessons may be learnt from other areas of clinical research, including cancer and cardiovascular services, where they have developed national and international research networks, established clinical trial registers and provided a sense of direction for ongoing research activity.

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Reference

1. Meldrum SJ, D'Vaz N, Simmer K, *et al.* (2012) Effects of high-dose fish oil supplementation during early infancy on neurodevelopment and language: a randomised controlled trial. *Br J Nutr* (Epublication ahead of print version 21 February 2012).