

The adequacy of long-chain n-3 fatty acid intakes in primary school children

By JM MCKENZIE, MC CLAPHAM, and A MacGREGOR. *Queen Margaret University, Edinburgh, Scotland, EH21 6UU*

Long-chain omega-3 polyunsaturated fatty acids (LC n-3 PUFA), particularly eicosapentanoic acid (EPA), and docosahexanoic acid (DHA), play an important role in neurological and cognitive development in children⁽¹⁾. Recent evidence suggests that the *in vivo* synthesis of these LC n-3 PUFA from α -linolenic acid (ALA) is less efficient than previously thought, which puts into question the adequacy of dietary intakes based on the conversion of ALA. Although sources of ALA can be found throughout the diet, intakes of preformed LC n-3 PUFA are restricted to relatively few, less commonly eaten foods, such as oily fish. In response, food producers have developed innovative approaches to increasing dietary intakes of LC n-3 PUFA, targeting many of these foods at parents by implying benefits in children's learning and behaviour. There is currently no information available on the current intake of LC n-3 PUFA in children and no validated method of collecting intake data.

The aim of this study was to assess the total intake of n-3 PUFA, with determination of the contributions of ALA, EPA, and DHA, in children aged 5-8 years old, using a food frequency questionnaire (FFQ), developed to incorporate both traditional and newly developed food products assumed to contribute to dietary intakes of n-3 PUFA's.

When compared against the DRV minimum recommendation for total n-3 PUFA, 0.2% of total energy⁽²⁾, intakes in females were significantly greater (n=22, p=0.007), however, intakes in males were not significantly different (n=11, p=0.184). Intakes of total LC n-3 PUFA appeared to be significantly lower than recommendations of 0.45g/day⁽³⁾ (p<0.0005 for both males and females).

This study indicates that despite the adequacy of dietary intakes of total n-3 PUFA in children, intakes of LC n-3 PUFA may be lower than the recommendations. Intakes of total n-3 PUFA, predominantly from ALA, were, however, significantly lower than the intakes reported in the National Diet and Nutrition Survey⁽⁴⁾ (p<0.0005 for both males and females) indicating that the use of this FFQ to estimate n-3 PUFA intakes requires further validation.

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