

Predictors of polyunsaturated fatty acid (PUFA) status in the first months of life

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Background - The relationship between dietary fats and tissue long chain polyunsaturated fatty acids (LCPUFA) levels is not always clear. It is well known that if we duplicate breast milk LCPUFA levels in formulas, it will cause infant plasma phospholipid levels of formula fed infants to be equivalent to breast fed infants. However, in both groups LCPUFA levels cover a considerable range. The extent to which the baseline (birth) value for plasma PUFA effects this range is not completely understood.

Objective - To determine the changes that occur in blood fatty acids of term infants post partum and to assess the degree to which LCPUFA levels track with birth levels.

Design - Infant blood samples were taken at enrolment (between day 1 and day 5) in a randomised controlled trial designed to test the effects of LCPUFA supplementation of standard formula. All infants received either formulas or breast milk exclusively from birth.

Outcomes - Some plasma fatty acids changed rapidly during the first days of life (linoleic acid, arachidonic acid) while others were more stable (docosahexaenoic acid). It is possible to estimate mean birth levels of plasma fatty acids by extrapolation of data obtained during the first week of life. There is a reasonable match between estimated birth levels of plasma fatty acids and cord levels.

Conclusions - Erythrocyte LCPUFA are useful predictors of later status but plasma phospholipid fatty acids change quickly with diet and are poor predictors.