PUFA AND NEURODEVELOPMENT – FROM MATERNAL PREGNANCY AND LACTATION TO INFANT DEVELOPMENT

Post birth n-3 LCPUFA supplementation in women and children – Who benefits?

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Over the past 2 decades there has been a marked shift in the fatty acid composition of the typical Western diet towards increased intake of the n-6 fatty acid linoleic acid (LA, 18:2n-6), largely as a result of the replacement of saturated fats with plant-based PUFA. Whilst health agencies internationally continue to advocate for high n-6 PUFA intake combined with increased intakes of preformed n-3 long chain polyunsaturated fatty acids (LCPUFA) docosahexaenoic acid (DHA, 22:6n-3) and eicosapentaenoic acid (EPA, 20:5n-3) for pregnant women and infants and to reduce the incidence of CVD, there are questions as to whether this is the best approach. LA competes with alpha linolenic acid (ALA, 18:3n-3) for endogenous conversion to long chain derivatives and LA also inhibits incorporation of DHA and EPA into tissues. Thus, high LA levels in the diet generally result in low n-3 LCPUFA status. Pregnancy and infancy are developmental periods during which the fatty acid supply is particularly critical. The importance of an adequate supply of n-3 LCPUFA for ensuring optimal development of infant brain and visual systems is well-established in preterm infants, and there is now evidence that the supply of n-3 LCPUFA also influences a range of growth, metabolic and immune outcomes in childhood. This review will question of whether the there are ways of improving the n-3 LCPUFA status of women and children other than supplementing the diet with marine oils rich in n-3 LCPUFA. Development of prudent public health strategies for improving the health of women and children must take into account economic and marine sustainability.