

Docosahexaenoic acid (DMA), essentiality and requirements: Why and how to provide supplementation

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Lipids comprise from 50-60% of the structural matter of the brain and docosahexaenoic acid (C22:6, DHA) is the most important omega-3 long-chain polyunsaturated fatty acid in the brain phospholipids comprising 25% of the total fatty acids of the grey matter. The majority of the DHA present in the human brain is incorporated during the brain growth spurt which starts at week 26 of gestation and imposes a high demand for the fatty acid until about 2 years of age. DHA is required during brain development when neuronal and glial differentiation and migration, and active myelination and synaptogenesis take place. The fatty acid must be incorporated into the brain lipids as preformed DHA because less than 5% of its precursor (alpha linolenic acid, LNA) is converted to DHA. The human foetus has a limited ability to synthesize DHA from LNA, and therefore it must be largely supplied from maternal sources. Maternal DHA available for foetal nutrition can be provided from three main sources: adipo