

REVIEW ARTICLE

Docosahexaenoic and arachidonic acid concentrations in human breast milk worldwide^{1, 2, 3, 4}

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Concentrations of the long-chain polyunsaturated fatty acids (LCPUFAs) docosahexaenoic acid (DHA, 22:6n-3) and arachidonic acid (AA, 20:4n-6) in human breast milk are important indicators of infant formula DHA and AA concentrations, and recent evidence suggests that neural maturation of breastfed infants is linked to breast-milk LCPUFA concentrations. We report a descriptive meta-analysis that considered 106 studies of human breast milk culled to include only studies that used modern analysis methods capable of making accurate estimates of fatty acid (FA) profiles and criteria related to the completeness of reporting. The final analysis included 65 studies of 2474 women. The mean (\pm SD) concentration of DHA in breast milk (by wt) is $0.32 \pm 0.22\%$ (range: 0.06–1.4%) and that of AA is $0.47 \pm 0.13\%$ (range: 0.24–1.0%), which indicates that the DHA concentration in breast milk is lower than and more variable than that of AA. The highest DHA concentrations were primarily in coastal populations and were associated with marine food consumption. The correlation between breast-milk DHA and AA concentrations was significant but low ($r = 0.25$, $P = 0.02$), which indicates that the mean ratio of DHA to AA in regional breast milk varies widely. This comprehensive analysis of breast-milk DHA and AA indicates a broad range of these nutrients worldwide and serves as a guide for infant feeding.

Key Words: Lactation • docosahexaenoic acid • arachidonic acid • infant nutrition • descriptive meta-analysis

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