

ORIGINAL RESEARCH COMMUNICATION

trans Octadecenoic acid and *trans* octadecadienoic acid are inversely related to long-chain polyunsaturates in human milk: results of a large birth cohort study^{1,2,3}

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Background: Several observational studies indicate that *trans* isomeric fatty acids may interfere with the metabolism of essential fatty acids in the human organism.

Objective: The objective was to investigate the relation between *trans* fatty acids and long-chain polyunsaturates in mature human milk.

Design: Human milk samples ($n = 769$) were obtained at the 6th week of lactation from mothers participating in a birth cohort study in Germany. The fatty acid composition of the milk samples was measured by high-resolution capillary gas-liquid chromatography.

Results: *trans* Octadecenoic and *trans* octadecadienoic acids were inversely correlated with linoleic acid ($r = -0.32$ and -0.33 , $P < 0.0001$ for both), α -linolenic acid ($r = -0.35$ and -0.27 , $P < 0.0001$), arachidonic acid ($r = -0.60$ and -0.47 , $P < 0.0001$), and docosahexaenoic acid ($r = -0.51$ and -0.33 , $P < 0.0001$). In contrast, no inverse correlations were observed between *trans* hexadecenoic acid and polyunsaturated fatty acids.

Conclusions: The data obtained in the present study suggest that the availability of 18-carbon *trans* isomeric fatty acids may be inversely related to the availability of long-chain polyunsaturated fatty acids in mature human milk.

Key Words: Arachidonic acid • docosahexaenoic acid • essential fatty acids • long-chain polyunsaturated fatty acids • *trans* fatty acids

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