

**Atopy, eczema and breast milk fatty acids in a high-risk cohort of children followed from birth to 5 yr.**

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**BACKGROUND:** The incidence of atopic diseases such as eczema is increasing in westernized societies. The suggestion that there is a "protective" association between the unique fatty acid composition of breast milk, particularly the omega-3 (n-3) and omega-6 (n-6) essential polyunsaturated fatty acid content, and the development of atopic disease in children was investigated in a cohort study of 263 infants born into families with a history of allergy (one or both parents had asthma, hayfever, eczema). The objectives of this study were to determine the lipid profile [specifically in relation to long-chain polyunsaturated fatty acid (LC-PUFA) composition] in maternal breast milk samples collected at 6 wk and at 6 months following birth, and to investigate the potential role of these fatty acids in modulating the phenotype of children at high genetic risk of developing atopic disease. **METHOD:** Breast milk samples were available from 91 atopic mothers at their child's ages of 6 wk and 6 months. These samples were analysed for the fatty acid spectrum. Analysis of variance was used to detect differences between groups of outcomes (no atopy or eczema, non-atopic eczema, atopy, atopic eczema) at ages 6 months and 5 yr, and a multiple comparisons procedure was conducted to isolate the parameters producing the different results (F-test, LSD test). For the exposure variables, n-3 and n-6 fatty acids are expressed as weight percentage and as a ratio (at both time-points). **RESULTS:** The fatty acid profiles of maternal breast milk at 6 wk and 6 months were similar. An increased ratio of n-6: n-3 fatty acids in both 6 wk and 6 month milk samples was associated with non-atopic eczema ( $p < 0.005$ ) but not atopy alone or atopic eczema. **CONCLUSION:** We found milk fatty acids were a significant modulator of non-atopic eczema but not atopy or atopic eczema in infants at 6 months. In mothers with a history of asthma, hayfever or eczema, their 6-month-old infants were more likely to develop non-atopic eczema if their milk had a higher ratio of n-6: n-3 LC-PUFA.