**FADS** gene cluster modulates the effect of breastfeeding on asthma. Results from the GINIplus and LISAplus studies.

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Allergy 2012; 67: 83-90.

**Abstract**

**Background:** The protective effect of breastfeeding (BF) on the development of asthma has been widely recognized, even if not all results have been consistent. Gene variants of the **FADS** gene cluster have a major impact on fatty acid composition in blood and in breast milk. Therefore, we evaluated the influence of the **FADS1 FADS2** gene cluster polymorphisms on the association between breastfeeding and asthma.

**Methods:** The analysis was based on data (N = 2245) from two German prospective birth cohort studies. Information on asthma and breastfeeding during the first 6 months was collected using questionnaires completed by the parents. Logistic regression modelling was used to analyse the association between exclusive breastfeeding and ever having asthma stratified by genotype.

**Results:** In the stratified analyses, breastfeeding for 3 or 4 months after birth had a protective effect for heterozygous and homozygous carriers of the minor allele (adjusted odds ratio between 0.37 (95% CI: 0.18-0.80) and 0.42 (95% CI: 0.20-0.88). Interaction terms of breastfeeding with genotype were significant and ranged from 1.17 (P-value: 0.015) to 1.33 (0.0066). Moreover, heterozygous and homozygous carriers of the minor allele who were exclusively breastfed for 5 or 6 months after birth had a reduced risk of asthma [0.32 (0.18-0.57) to 0.47 (0.27-0.81)] in the stratified analyses. For individuals carrying the homozygous major allele, BF showed no significant effect on the development of asthma.

**Conclusions:** The association between exclusive breastfeeding and asthma is modified by
the genetic variants of \textit{FADS} genotypes in children

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