Intake of n-3 polyunsaturated fatty acids in childhood, FADS genotype and incident asthma

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In children with a common fatty acid desaturase (FADS) variant, higher intake of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) from fish in mid-childhood was strongly associated with a lower risk of incident asthma up to mid-adolescence https://bit.ly/2M4VxO6

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Abstract

Longitudinal evidence on the relation between dietary intake of n-3 (ω-3) very-long-chain polyunsaturated fatty acids, i.e. eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), in mid-childhood and asthma risk is scarce. We aimed to investigate whether a higher intake of EPA and DHA from fish in childhood is associated with a lower risk of incident asthma.

In the Avon Longitudinal Study of Parents and Children, dietary intakes of EPA and DHA from fish were estimated by food frequency questionnaire at 7 years of age. We used logistic regression, controlling for confounders, to analyse associations between intake of EPA and DHA (quartiles) and incidence of doctor-diagnosed asthma at age 11 or 14 years, and explored potential effect modification by a fatty acid desaturase (FADS) polymorphism (rs1535). Replication was sought in the Swedish BAMSE birth cohort. There was no evidence of association between intake of EPA plus DHA from fish in childhood and asthma risk overall (n=4543). However, when stratified by FADS genotype, the odds ratio comparing the top versus bottom quartile among the 2025 minor G allele carriers was 0.49 (95% CI 0.31–0.79; P<0.006), but no inverse association was observed in the homozygous major A allele group (OR 1.43, 95% CI 0.83–2.46; P<0.006) (Pinteraction=0.006). This gene–nutrient interaction on incident asthma was replicated in BAMSE.

In children with a common FADS variant, higher intake of EPA and DHA from fish in childhood was strongly associated with a lower risk of incident asthma up to mid-adolescence.