Dietary intake of vitamin A, lung function and incident asthma in childhood

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A higher intake of preformed vitamin A, but not pro-vitamin β-carotene, in mid-childhood was associated with higher subsequent lung function and lower risk of fixed airflow limitation and incident asthma https://bit.ly/3d7PUca

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Abstract

Background Longitudinal epidemiological data are scarce on the relationship between dietary intake of vitamin A and respiratory outcomes in childhood. We investigated whether a higher intake of preformed vitamin A or pro-vitamin β-carotene in mid-childhood is associated with higher lung function and with asthma risk in adolescence.

Methods In the Avon Longitudinal Study of Parents and Children, dietary intakes of preformed vitamin A and β-carotene equivalents were estimated by food frequency questionnaire at 7 years of age. Post-bronchodilator forced expiratory volume in 1 s (FEV_1), forced vital capacity (FVC) and forced expiratory flow at 25–75% of FVC ($FEF_{25–75\%}$) were measured at 15.5 years and transformed to z-scores. Incident asthma was defined by new cases of doctor-diagnosed asthma at age 11 or 14 years.

Results In multivariable adjusted models, a higher intake of preformed vitamin A was associated with higher lung function and a lower risk of incident asthma: comparing top *versus* bottom quartiles of intake, regression coefficients for FEV_1 and $FEF_{25–75\%}$ were 0.21 (95% CI 0.05–0.38; p_{trend}=0.008) and 0.18 (95% CI 0.03–0.32; p_{trend}=0.02), respectively; odds ratios for FEV_1/FVC below the lower limit of normal and incident asthma were 0.49 (95% CI 0.27–0.90; p_{trend}=0.04) and 0.68 (95% CI 0.47–0.99; p_{trend}=0.07), respectively. In contrast, there was no evidence for association with β-carotene. We also found some evidence for modification of the associations between preformed vitamin A intake and lung function by *BCMO1*, *NCOR2* and *SCGB1A1* gene polymorphisms.

Conclusion A higher intake of preformed vitamin A, but not β-carotene, in mid-childhood is associated with higher subsequent lung function and lower risk of fixed airflow limitation and incident asthma.