

# Abstract

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## Higher serum folate levels are associated with a lower risk of atopy and wheeze.

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**BACKGROUND:** Folic acid is known to be associated with inflammatory diseases, but the relationship between folic acid and allergic diseases is unclear.

**OBJECTIVES:** The purpose of the study was to examine the relationship between serum folate levels and markers of atopy, wheeze, and asthma.

**METHODS:** Data were obtained from the 2005-2006 National Health and Nutrition Examination Survey in which serum folate and total IgE levels were measured in 8083 subjects 2 years of age and older. A high total IgE level was defined as greater than 100 kU/L. Allergen-specific IgE levels were measured for a panel of 5 common aeroallergens. Atopy was defined as at least 1 positive allergen-specific IgE level. Doctor-diagnosed asthma and wheeze in the previous 12 months were assessed by means of questionnaire.

**RESULTS:** Serum folate levels were inversely associated with total IgE levels ( $P < .001$ ). The odds of a high total IgE level, atopy, and wheeze decreased across quintiles of serum folate levels, indicating a dose-response relationship between serum folate levels and these outcomes. Each of these associations remained statistically significant after adjusting for age, sex, race/ethnicity, and poverty index ratio. Adjusted odds ratios associated with the fifth quintile of folate relative to the first quintile were as follows: high IgE level, 0.70 (95% CI, 0.53-0.92); atopy, 0.69 (95% CI, 0.57-0.85); and wheeze, 0.60 (95% CI, 0.44-0.82). Higher folate levels were also associated with a lower risk of doctor-diagnosed asthma, but this finding was not statistically significant (odds ratio for fifth quintile vs first quintile, 0.84 [95% CI, 0.70-1.02]).

**CONCLUSIONS:** Serum folate levels are inversely associated with high total IgE levels, atopy, and wheeze.

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