

Variations in airborne pollen antigenic particles caused by meteorologic factors.

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Author information

Abstract

High birch pollen antigenic activities in outdoor air samples were found in all particle sizes studied (> 7.2, 2.4-7.2, < 2.4 microns and molecular size class, with an ELISA modification). Sampling was done with a low-volume, size-selective bioaerosol sampler (SSBAS) simulating the human respiratory tract in both volume and fractionation. Airborne birch pollen counts for comparisons were obtained from a Burkard trap. No correlations were obtained between antigen concentrations in any particle size fraction and airborne pollen counts. The meteorologic factors studied differed clearly in their effect on antigenicity, depending on the size class studied.

Likewise, the effect of meteorologic factors differed among the three study periods (period I, 4 weeks before the peak pollen season; period II, during the season; and period III, 4 weeks after the season). During the peak pollen period, temperature and relative humidity were the most important meteorologic factors. Before the season, large and very small particles predominated, medium-sized particles being totally absent. The largest size class studied (containing all intact pollen grains) clearly reacted to changes in meteorologic factors; for smaller size classes, these factors were found to be less important, a fact which may make the forecasting of antigen concentrations in the air on the basis of meteorologic data impossible.