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Editorial

Discovering allergens

In this issue of the JOURNAL, Garcia-Ortega et al., pages 987-93, present proof that pollen from the weed, *Mercurialis annua*, can cause a seasonal wintertime hay fever in atopic individuals. Although this work comes from Tarragona on the Mediterranean coast of Spain, *M. annua* is found in many parts of Europe, North Africa, and North America. Demonstration that a pollen is a cause of allergic symptoms has traditionally been governed by Thommen's postulates. These are mainly concerned with the widespread habitat of the plant and the production of wind-borne pollen in large enough amounts to be inhaled.

The final postulate, however, is that the pollen must contain an excitant of hay fever. With advances in immunologic techniques, demonstration of this point has become more complex, and the work with *Mercurialis* demonstrates nicely what should be done. These authors have collected the authentic pollen, extracted it, and then dialyzed and sterilized the extract. They kept the extract stable by lyophilization and provisionally standardized it by protein and content of solids. After prick testing demonstrated that a number of atopic patients with winter hay fever had positive skin tests, they developed a RAST test and demonstrated IgE antibodies to *Mercurialis* in most of these patients. Provocation tests by both nasal and bronchial routes demonstrated allergic responses.

Finally, isoelectric focusing and IgE-specific immunoblotting demonstrated two main classes of allergenic materials in the extract. This opens the way to eventual standardization of extracts by specific allergens, should use of *M. annua* extracts become widespread.

In Tarragona, 8.5% of airborne allergen-sensitive patients tested demonstrated skin test sensitivity, revealing in a preliminary way the significance of this allergen. Furthermore, one patient previously diagnosed as having "intrinsic asthma" was found to be sensitive to this pollen and had asthma coexistent with the season of pollination. The authors suggest that further search for hitherto unidentified allergens might disclose an allergic cause for what has been regarded as nonallergic asthma. In a more general way, this view is supported by the work of Burrows et al.¹ who found a relationship between total serum-IgE level and asthma in children from 6 years of age to adults older than 55 years. Their work had been confirmed in children by Sears et al.² In these studies, it was necessary to compare, within a specific age group, because of the general change in serum IgE with age. It is worth noting that the differences in asthma incidence are quite large. In both studies, the subjects with the highest IgE levels for their age group had a 30% or more incidence of asthma or airway responsiveness, whereas subjects with the lowest IgE almost never had evidence of disease.

The search for additional allergens in asthma need not be confined to airborne substances. Ingested substances, such as sulfites, and infectious agents, such as dermatophytes, are also candidates. In any event, mere suspicion is not enough; the exemplary work

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with *M. annua* demonstrates the many facets of proper proof that a suspected allergen is indeed allergenic.

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