



Editorial

Component testing for food allergies

“To order or not to order”



In this issue of *Annals*, there are an excellent series of Pro-Con debates surrounding various themes of food allergy. In 1 of these debates, Drs. Anagnostou¹ and Greenhawt² discuss whether component resolved diagnostic testing is better than other modalities for the diagnosis of allergy, concentrating the discussion on food allergy. Component tests are commonly used in Europe and are commercially available in the United States for peanut, tree nuts, egg, and milk. With the increased incidence of food allergy, this debate should be germane to the practicing allergist.^{1–8}

Both authors reference studies that show a utility for many of these component tests, with the most data published using the peanut components. The data they reference suggest that in certain clinical settings, component testing has the capability of adding some degree of specificity or further benefit beyond the whole food, or traditional immunoglobulin E (IgE) test. This is attributable to the idea that each food we eat has multiple proteins in it, each that could theoretically lead to the development of IgE in an allergic individual and thus lead to positive testing using the whole food extract or serum test. However, some of these proteins may not be clinically relevant; that is, they would lead to positive testing in the absence of clinical allergy if ingested.

By teasing out specifically which proteins a patient's IgE binds, the benefits of component testing for food allergy could be seen in various scenarios, as Dr. Anagnostou points out. For example, if a patient with no history or reaction to peanut has a low peanut-specific serum IgE level, it may benefit to perform an oral challenge to definitively rule peanut allergy in or out. In this case, perhaps if component testing shows binding to Ara h 1, 2, or 3, the clinician may choose to not pursue challenge. Conversely, in a patient who has an unconvincing history, yet a high peanut-specific serum IgE level, components could perhaps help to guide the physician if challenge would be reasonable, such as if that IgE binds Ara h 8 (a Bet v 1 homolog). Finally, as Dr. Anagnostou points out, components have been shown to hold promise in predicting tolerance to baked forms of egg and milk in egg- and milk-allergic patients.

Although the concept and most of the data to date do indeed suggest a benefit of component testing in these clinical scenarios, Dr. Greenhawt² brings about a valid point in his argument. He does not dismiss the concept of component testing, or in the data produced to date. He does however point out that most of the studies published enrolled a highly allergic population from tertiary referral centers. Thus, by including a skewed population, it is difficult to extrapolate data to a larger population. For example, for

peanut, we know from a systematic review how peanut component sIgE perform in cohorts of peanut-allergic patients who did receive challenge.⁹ In addition, we know the breakdown of peanut component testing in patients evaluated for peanut allergy in the United States from more than 15,000 samples.¹⁰ Finally, we know how often peanut-specific IgE is positive in thousands of random samples from people in the United States of all ages.¹¹

However, what we do not know is how the peanut components break down in patients who are eating peanut regularly without symptoms, or the characteristics of the test in the general population. For example, if Ara h2 is positive at any detectable rate in this population, it would change the performance of the test and how a clinician might be inclined to use it.

What I believe we should take home from this discussion is that component testing has the ability to improve on our current state of allergy testing (using whole food extract skin or serum testing) and has a place in the world of food allergy diagnosis. However, if we choose to embrace the use of these tests, we must understand their limitations and perhaps not accept them as canon just yet.

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