



## FOOD COMPONENT ALLERGEN TESTING SERVICES



Knowing a patient's sensitization to an allergen component can help inform management strategies.

## Component Testing Matters

Almost anything that contains a protein can be an allergen source, including foods.<sup>1</sup> Egg, milk and peanut are some of the most clinically important food allergen sources, as well as common childhood triggers.<sup>2</sup> Along with other constituents, each of these foods is composed of allergenic proteins that are classified into families according to structure and biological function. Generally, heat- or digestion-resistant proteins often trigger more severe, systemic clinical reactions; whereas those proteins that are heat- or digestion-labile tend to cause milder, local reactions which may be in part due to cross-reactivity with various other allergen sources.<sup>3</sup>

Traditional in vitro allergen-specific IgE testing analyzes a whole allergen source, providing a single, composite allergen-specific IgE antibody result. This result does not report the protein component allergenic sources. On the other hand, in vitro allergen component testing analyzes the relevant protein components within the whole protein, providing an IgE antibody result for each component. Quantification of protein specific IgE of each of these relevant components is necessary to determine which may control overall sensitization to the whole allergen source.

## Patient Management Considerations

IgE allergen component testing may be helpful in those cases wherein clinicians need to identify and quantify the IgE levels of the parts or components of a suspected, offending allergen that trigger genuine allergic sensitization and likely severe, systemic reaction and those that may produce cross-reactive sensitization and decreased clinical responsiveness.

Knowing this information may assist with management decisions, such as<sup>3</sup>:

- Patient risk assessment and stratification for procedures such as food challenge testing,
- Patient counseling on allergen exposure reduction and/or avoidance, or
- Patient selection and selection of specific allergen(s) for immunotherapy.

As with any allergy testing, it is important to stress the importance of evaluating allergen component test results within the context of the patient's history, as allergen IgE sensitization does not necessarily equate to clinical responsiveness; and each allergic patient responds individually to exposure to various allergen sources, creating his or her own distinct IgE antibody molecular "profile".<sup>3</sup>

# LabCorp is pleased to offer the following test options utilizing the ImmunoCAP® method to assist in managing your allergy patients:

## PEANUT

Traditional whole peanut allergen specific IgE testing is frequently used to confirm peanut sensitization; however, it is not a reliable predictor of peanut allergy.<sup>4</sup> Whole peanut contains several predominant allergenic proteins, including the proteins Ara h 1, 2, 3, 6, 8, and 9.<sup>3</sup> Used in combination with detailed history, IgE testing results from these proteins may offer insights into patient peanut sensitization and reactions, aiding in food challenge, avoidance or tolerance decisions.

### Ara h 1, 2, 3, and 6

These proteins are classified as seed storage proteins and are heat and digestion resistant. While all are associated with increased risk for severe clinical reactions, Ara h 2 sensitization has been reported to be the most significant predictor of clinical allergy and severe reactions.<sup>4,6</sup>

### Ara h 8

A pathogenesis-related family 10 protein (PR-10), Ara h 8 is heat labile and a marker of milder or local symptoms. Ara h 8 is often tolerated in cooked foods.<sup>1</sup> Related to birch tree pollen due to its status as a Bet v 1 homologue, Ara 8 sensitization may often be associated with cross-reactive sensitization and associated with milder, local symptoms such as those associated with Oral Allergy Syndrome (OAS): acute onset oropharyngeal pruritus and angioedema of the lips.<sup>1-3</sup>

### Ara h 9

This protein is classified as a lipid transfer protein and is heat and digestion stable, also causing reactions in cooked foods. In southern Europe, Ara h 9 sensitization is often associated with systemic and more severe reactions in addition to OAS.<sup>1,3</sup>

#### **Peanut Component Allergy Profile (605971)**

**Profile includes:** Ara h 1, Ara h 2, Ara h 3, Ara h 6, Ara h 8, Ara h 9

#### **Allergen Profile, Peanut, IgE with Component Reflexes (603916)\***

**Profile Includes:** Peanut IgE; If peanut IgE is  $\geq 0.1$  kU/L, then reflex testing is completed for Ara h 1, Ara h 2, Ara h 3, Ara h 6, Ara h 8, Ara h 9

## MILK

Casein, beta-lactoglobulin, and alpha-lactalbumin comprise the major milk allergen proteins, although sensitization to other minor proteins has been reported.<sup>1</sup> Casein and beta-lactoglobulin are protein markers for persistent milk allergy, including reactions to cooked or heated milk. Undetectable levels of casein and beta-lactoglobulin in milk allergic individuals suggest tolerance to baked milk products.<sup>3</sup>

#### **Allergen Profile, Milk Component IgE (603849)**

**Profile Includes:** Alpha-lactalbumin, Beta-lactoglobulin, and Casein IgE

#### **Allergen Profile, Milk, IgE With Component Reflexes (603927)\***

**Profile Includes:** Milk IgE; If milk IgE is  $\geq 0.35$  kU/L, then reflex testing is completed for Alpha-lactalbumin, Beta-lactoglobulin, and Casein IgE

## EGG

Ovomucoid and ovalbumin are among the major allergenic proteins found in egg white.<sup>5</sup> Ovomucoid, which is heat and digestion stable, is the primary allergenic component. The absence of or low levels of ovomucoid IgE antibodies in egg allergy patients are associated with the increased probability of developing tolerance. Higher levels of ovomucoid IgE antibody have been recognized as a risk factor for persistent egg allergy, including reactions to cooked/heated egg.<sup>1</sup>

#### **Allergen Profile, Egg Component IgE (603833)**

**Profile includes:** Ovalbumin IgE and Ovomuroid IgE

#### **Allergen Profile, Egg White, IgE With Component Reflexes (603940)\***

**Profile Includes:** Egg White IgE; If egg white IgE is  $\geq 0.35$  kU/L, then reflex testing is completed for Ovalbumin IgE and Ovomuroid IgE

\*If reflex testing is performed, additional charges/CPT code(s) may apply

## FOOD

### Allergen Profile, Food IgE With Component Reflexes (603834)\*

**Profile includes:** Clam; codfish; corn; egg white; milk; peanut; scallop; sesame seed; shrimp; soybean; walnut; wheat

- If milk IgE is  $\geq 0.35$  kU/L, then Alpha-lactalbumin; Beta-lactoglobulin; and Casein IgE will be performed
- If egg white IgE is  $\geq 0.35$  kU/L, then Ovalbumin IgE and Ovomuroid IgE will be added
- If peanut IgE is  $\geq 0.1$  kU/L, then Ara h 1, Ara h 2, Ara h 3, Ara h 6, Ara h 8, Ara h 9

### Allergen Profile, Food-Basic With Component Reflexes (603857)\*

**Profile includes:** Codfish; egg white; milk; peanut; soybean; wheat

- If milk IgE is  $\geq 0.35$  kU/L, then Alpha-lactalbumin; Beta-lactoglobulin; and Casein IgE will be performed
- If egg white IgE is  $\geq 0.35$  kU/L, then Ovalbumin IgE and Ovomuroid IgE will be added
- If peanut IgE is  $\geq 0.1$  kU/L, then Ara h 1, Ara h 2, Ara h 3, Ara h 6, Ara h 8, Ara h 9

## PEDIATRIC

### Allergen Profile Plus, IgE (Pediatric) With Component Reflexes (603858)\*

**Profile includes:** *Alternaria alternata*; cat dander; *Cladosporium herbarum*; cockroach, German; codfish; *Dermatophagoides farinae*; *Dermatophagoides pteronyssinus*; dog dander; egg white; immunoglobulin E, total; milk; peanut; shrimp; soybean; walnut; wheat; mouse urine

- If milk IgE is  $\geq 0.35$  kU/L, then Alpha-lactalbumin; Beta-lactoglobulin; and Casein IgE will be performed
- If egg white IgE is  $\geq 0.35$  kU/L, then Ovalbumin IgE and Ovomuroid IgE will be added
- If peanut IgE is  $\geq 0.1$  kU/L, then Ara h 1, Ara h 2, Ara h 3, Ara h 6, Ara h 8, Ara h 9

\*If reflex testing is performed, additional charges/CPT code(s) may apply

#### References

1. Sastre J. Molecular diagnosis in allergy. *Clinical & Experimental Allergy* 2010 1-19.
2. Chapman JA, Bernstein LJ, Lee RE et al. Food allergy: a practice parameter. *Ann Allergy, Asthma Immunol* 2006(96)S1-68.
3. Canonica GW, Ansotegui IJ, Pawankar R et al. A WAO – ARIA – GA2LEN consensus document on molecular-based allergy diagnostics. *World Allergy Organization Journal* 2013,6(17)1-17.
4. Dang TD, BBiomedSc (Hons), Tang H, et al. Increasing the accuracy of peanut allergy diagnosis by using Ara h 2. *J Allergy Clin Immunol* 2012 (129):1056-1063.
5. Ando H, Moverare R, Kondo Y et al. Utility of ovomucoid-specific IgE concentrations in predicting symptomatic egg allergy. *J Allergy Clin Immunol* 2008;(122):583-588.
6. Klemans RJ, Knol EF, Bruijnzeel-Koomen CA, Knulst AC. The diagnostic accuracy of specific IgE to Ara h 6 in adults is as good as Ara h 2. *Allergy*. 2014; 69(8):1112-4.

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