

September 2014 • Physicians

Food Allergies

Peanut, Egg, and Milk

Food component testing

Knowing your patient has a food allergy isn't enough. It's important to be able to tell whether that allergy will cause a severe reaction. It's also important to know whether the patient has to completely stay away from the food or not. And it would be nice to know if a child will outgrow the allergy. Serum testing can now help give you that answer for people with peanut, egg, or milk allergies. This type of testing is called food component testing. Food component testing is only available from a blood test. It cannot be done as part of a skin test.

Food component testing is different from other allergy testing

Other allergy tests are based on a crude extract of the food. These extracts contain proteins that cause an allergic reaction. They also contain proteins that don't. And they contain proteins that cross-react with pollen or other allergens. So they don't always correlate very well with symptoms in many people. They don't predict who will and who won't have a general reaction when the result is positive. Nor do they predict who will have a severe reaction.

Food component testing is based on the specific proteins that cause a reaction. They are more specific and correlate better with the allergic reaction.

How food component testing works

This kind of testing looks for IgE antibodies to specific proteins in the food. These proteins can all cause an allergic reaction. Some of them cause only a mild or moderate reaction. Others cause a severe reaction. Some break down during the cooking process and may be less likely to cause an allergic reaction.

Peanut component testing can find out if the patient is likely to have a severe reaction to peanuts²⁻⁵:

Peanut Protein	Risk of Severe Reaction with Positive Test Result
Ara h 1, 2, or 3	High, especially with Ara h 2
Ara h 9	Moderate
Ara h 8	Low



Food allergy diagnostic strategy¹

- Medical history and exam
- History of reaction(s) to each suspect food
- Skin scratch test and/or specific IgE serum test
- Food elimination diet
- Oral food challenge

Egg component testing can find out if the patient is allergic to raw egg, cooked egg, or both⁶:

Egg Protein	Interpretation
Egg white	
IgE >7.4 kU _A /L	↑ risk of reaction to raw or slightly cooked eggs
IgE <0.6 kU _A /L	↓ risk of reaction to raw or slightly cooked eggs
Ovomucoid (Gal d 1)	
IgE >10.8 kU _A /L	↑ risk of reaction to raw and cooked eggs
IgE <1.2 kU _A /L	↓ risk of reaction to cooked (baked) eggs

ImmunoCAP method.

There are several important proteins in milk. These include casein, α -lactalbumin, and β -lactoglobulin. The most important one is casein. This is because more people are allergic to casein.⁷ It's also because IgE antibodies to casein are better at detecting milk allergies.⁸ Milk component testing can help find out if the patient 1) is likely to react to heated milk, 2) can safely undergo a heated milk challenge, and 3) is not likely to outgrow the milk allergy⁹:

Milk Protein	Interpretation
Milk	
IgE <5 kU _A /L	Patient likely to tolerate heated milk challenge
Casein	
High IgE	↑ risk of reaction to extensively heated milk
Low IgE	↓ risk of reaction to extensively heated milk
β -lactoglobulin	
High IgE	↑ risk of reaction to extensively heated milk; more likely to remain allergic

UniCAP method.

What this means for you and your patients

Patients want to know how they can live well in spite of their allergy. Food component testing can help you tell them:

- If they need to carry epinephrine
- If they can eat the food raw, cooked, or neither
- If they are likely to outgrow the allergy

Food component testing can also help you decide if, when, and what kind of oral food challenge to do. For example, a decreasing or low IgE antibody to ovomucoid suggests you can safely do a cooked egg challenge. This can tell you if the patient can add baked eggs, cakes, etc. to his/her diet.

References

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