Test Definition: PEANT

Peanut Component Reflex, S

Overview

Useful For

Evaluation of patients with suspected peanut allergy

Evaluation of patients with possible peanut cross-reactivity

Reflex Tests

Test ID	Reporting Name	Available Separately	Always Performed
PNTCO	Peanut Components, S	No	No

Testing Algorithm

Testing begins with analysis of peanut IgE. If peanut IgE is undetectable (<0.10 kU/L), testing is completed.

If peanut IgE is detectable (> or =0.10 kU/L), then the 5 peanut components (Ara h 2, Ara h 1, Ara h 3, Ara h 8, and Ara h 9) are performed at an additional charge.

Special Instructions

- Allergens - Immunoglobulin E (IgE) Antibodies

Method Name

Fluorescent Enzyme Immunoassay (FEIA)

NY State Available

Yes

Specimen

Specimen Type

Serum

Advisory Information

For a listing of allergens available for testing, see Allergens - Immunoglobulin E (IgE) Antibodies in Special Instructions

Specimen Required

Container/Tube:

Preferred: Red top

Acceptable: Serum gel

Specimen Volume: 1.5 mL

Forms

If not ordering electronically, complete, print, and send an Allergen Test Request (T236) with the specimen.

Specimen Minimum Volume

1 mL

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	14 days	
	Frozen	90 days	

Clinical and Interpretive

Clinical Information

Peanut allergy is one of the most common food allergies in the United States, with an estimated prevalence of approximately 1% to 2%.(1) The clinical symptoms of peanut allergy may range from relatively mild, such as rhinorrhea, pruritus, or nausea, to an anaphylactic reaction that is systemic and potentially life-threatening. The diagnosis of peanut allergy is dependent upon the presence of compatible clinical symptoms in the context of peanut exposure, with support from identification of peanut-specific IgE antibodies, either by skin testing or in vitro serology testing. In vitro testing has generally focused on assessing for the presence of total peanut IgE antibodies. These antibodies are identified by immunoassay in which the capture allergen is an extract prepared from natural peanut raw material. Most studies have demonstrated a correlation between total peanut IgE antibodies and an increased likelihood of a clinical allergic response. However, some patients with significantly elevated concentrations of total peanut IgE antibodies do not have any reaction when administered a peanut oral food challenge. In some cases, this may be due to the presence of an IgE antibody specific for a nonallergenic protein present within the peanut extract. This is the basis of component allergen testing, in which the presence of IgE antibodies specific for individual proteins, namely Ara h 1, Ara h 2, Ara h 3, Ara h 8, and Ara h 9, within the peanut extract are assessed. Ara h 1, 2, and 3 are seed storage proteins, and are the most relevant for evaluation of suspected peanut allergy.(2,3) Ara h 2, in particular, has the best sensitivity and specificity for clinically relevant peanut allergic disease. Ara h 1, 2, and 3-specific IgEs also tend to be associated with more severe allergic reactions. Ara h 9 is a member of the lipid transfer protein (LTP) family. LTPs are ubiquitous throughout the plant kingdom, and are also extremely homologous. IgE antibodies specific for Ara h 9 may be associated with allergic reactions upon peanut ingestion, although published data on this is not conclusive.(4) In addition, because of the significant sequence homology, cross-reactivity of IgE antibodies may be observed between Ara h 9 and LTPs in commonly consumed plants such as peaches, apples, and plums. Lastly, Ara h 8 is a homologue of the birch pollen allergen Bet v 1. IgE antibodies against Ara h 8 are generally associated with milder peanut allergies and may be seen in the context of birch pollen sensitization.(5)

Reference Values

Class	IgE kU/L	Interpretation
0	<0.10	Negative
0/1	0.10-0.34	Borderline / Equivocal
1	0.35-0.69	Equivocal

2	0.70-3.49	Positive
3	3.50-17.4	Positive
4	17.5-49.9	Strongly positive
5	50.0-99.9	Strongly positive
6	> or =100	Strongly positive

Reference values apply to all ages.

Interpretation

Negative for total peanut IgE:

-Negative IgE results for total peanut may indicate a lack of sensitization to peanut. Because IgE antibodies specific for total peanut are not detectable, testing for peanut components is not performed.

Positive for total peanut IgE/negative for peanut component IgE:

-Positive IgE results for total peanut in the absence of detectable IgE responses to any peanut components may indicate a low to moderate sensitization to peanut. Correlation with patient history of allergic or anaphylactic responses to peanut is recommended.

Positive for total peanut IgE/positive for peanut component IgE:

-Positive IgE results to the storage proteins Ara h 1, Ara h 2, and Ara h 3 in the context of a positive IgE result for total peanut may be associated with sensitization to peanut, with increased risk for allergic reaction upon exposure to peanut, and/or with a stronger risk for a systemic reaction.

-Positive IgE results to Ara h 8 in the context of a positive IgE result for total peanut, but with negative antibodies to Ara h 1, Ara h 2, and Ara h 3, may be associated with cross-reactivity with birch and birch-related tree pollens and/or with an increased risk of a localized allergic reaction.

-Positive IgE results to Ara h 9 have been associated with both systemic and localized reactions, and with cross-reactivity to peach and peach-related fruits.

Cautions

Negative results for IgE to total peanut and any peanut components do not completely exclude the possibility of clinically relevant allergic responses upon exposure to peanut. Recommend correlation of results from in vitro IgE testing with patient history of allergic or anaphylactic responses to peanut.

Positive results for IgE to total peanut or any peanut components are not diagnostic for peanut allergy, and only indicate patient may be sensitized to peanut or cross-reactive allergen. Recommend correlation of results from in vitro IgE testing with patient history of allergic or anaphylactic responses to peanut.

Testing for IgE antibodies is not useful in patients previously treated with immunotherapy to determine if residual clinical sensitivity exists, or in patients in whom the medical management does not depend upon identification of allergen specificity. Â

False-positive results for IgE antibodies may occur in patients with markedly elevated serum IgE (>2500 kU/L) due to nonspecific binding to allergen solid phases.

Clinical Reference

1. Sicherer SH, Wood RA: Advances in diagnosing peanut allergy. J Allergy Clin ImmunolPract 2013;1:1-13

2. Eller E, Bindslev-Jensen C: Clinical value of component-resolved diagnostics in peanut-allergic patients. Allergy 2013;68:190-194

3. Hong X, Caruso D, Kumar R, et al: IgE, but not IgG4, antibodies to Ara h 2 distinguish peanut allergy from asymptomatic peanut sensitization. Allergy 2012;67:1538-1546

4. Klemans RJ, van Os-Medendorp H, Blankestijn M, et al: Diagnostic accuracy of specific IgE to components in diagnosing peanut allergy: a systematic review. Clin Exp Allergy 2015;45:720-730

5. Asarnoj A, Nilsson C, Lidholm J, et al: Peanut component Ara h 8 sensitization and tolerance to peanut. J Allergy Clin Immunol 2012;130:468-472

Performance

Method Description

Specific IgE from the patient's serum reacts with the allergen of interest, which is covalently coupled to an ImmunoCAP. After washing away nonspecific IgE, enzyme-labeled anti-IgE antibody is added to form a complex. After incubation, unbound anti-IgE is washed away and the bound complex is then incubated with a developing agent. After stopping the reaction, the fluorescence of the eluate is measured. Fluorescence is proportional to the amount of specific IgE present in the patient's sample (ie, the higher the fluorescence value, the more IgE antibody is present).(Package insert: ImmunoCAP System Specific IgE FEIA, Uppsala, Sweden Rev 06/2019)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Friday; 9 a.m.-8 p.m.

Saturday; 8 a.m.-3 p.m.

Analytic Time

Same day/1 day

Maximum Laboratory Time

3 days

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees and Codes

Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact Customer Service.

Test Classification

This test has been cleared, approved or is exempt by the U.S. Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

86003

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
PEANT	Peanut Component Reflex, S	6206-7

Result ID	Test Result Name	Result LOINC Value
PNUT	Peanut, IgE, S	6206-7