MAYO CLINIC LABORATORIES

Test Definition: PEAN

Peanut, IgE, Serum

Overview

Useful For

Establishing a diagnosis of an allergy to peanut

Defining the allergen responsible for eliciting signs and symptoms

Identifying allergens:
-Responsible for allergic response and/or anaphylactic episode
-To confirm sensitization prior to beginning immunotherapy
-To investigate the specificity of allergic reactions to insect venom allergens, drugs, or chemical allergens

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.

Special Instructions

- Allergens - Immunoglobulin E (IgE) Antibodies

Highlights

Immunoglobulin E antibody to total peanut extract will be tested.

In vitro serum testing for IgE antibodies to total peanut extract provides an indication of potential immune response to peanut related allergens that may be associated with allergic disease.

Method Name

Fluorescence Enzyme Immunoassay (FEIA)

NY State Available

Yes

Specimen

Specimen Type

Serum

Ordering Guidance

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

Specimen Required

Collection Container/Tube:

Preferred: Serum gel
Acceptable: Red top
Submission Container/Tube: Plastic vial
Specimen Volume: 0.5 mL for every 5 allergens requested
Collection Instructions: Centrifuge and aliquot serum into a plastic vial.

Forms

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

Specimen Minimum Volume

For 1 allergen: 0.3 mL
For more than 1 allergen: (0.05 mL x number of allergens) + 0.25 mL deadspace

Reject Due To

Gross hemolysis	OK
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	14 days	
	Ambient	7 days	
	Frozen	90 days	

Clinical & 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 a systemic and potentially life-threatening anaphylactic reaction. The diagnosis of peanut allergy is based upon the presence of compatible clinical symptoms in the context of peanut exposure, with support from identification of potential peanut-specific IgE allergen antibodies, either by skin testing or in vitro serology testing.

In vitro serology 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 the amount of total peanut IgE allergen antibody present and an increased likelihood of a clinical allergic response.

Clinical manifestations of immediate hypersensitivity (allergic) diseases are caused by the release of proinflammatory mediators (histamine, leukotrienes, and prostaglandins) from IgE-sensitized effector cells (mast cells and basophils) when cell-bound IgE antibodies interact with allergen.

Once an elevated antibody response to total peanut IgE extract is established, assessment for the presence of specific IgE antibodies to the most common individual peanut allergenic components may be considered.

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.

Concentrations of 0.70 kU/L or more (class 2 and above) will flag as abnormally high.

Interpretation

Detection of IgE antibodies in serum (class 1 or greater) indicates an increased likelihood of allergic disease as opposed to other etiologies and defines the allergens that may be responsible for eliciting signs and symptoms.

The level of IgE antibodies in serum varies directly with the concentration of IgE antibodies expressed as a class score or kU/L.

Cautions

Results from peanut specific IgE antibody testing must be interpreted in the context of patient's clinical evaluation and history of allergen exposures.

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. Clinical correlation of results from in vitro IgE testing with patient history of allergic or anaphylactic responses to peanut is recommended.

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

Some patients with significantly elevated concentrations of total peanut IgE antibodies do not have any reaction when administered a peanut oral food challenge. This may be due to the presence of an IgE antibody specific for a nonallergenic protein present within the peanut extract.

Furthermore, some individuals with clinically insignificant or no sensitivity to allergens may have detectable levels of IgE antibodies in serum; therefore, results must be interpreted in the clinical context. 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 Immunol Pract. 2013 Jan;1(1):1-13. doi: 10.1016/j.jaip.2012.10.004
2. Eller E, Bindslev-Jensen C: Clinical value of component-resolved diagnostics in peanut-allergic patients. Allergy. 2013 Feb;68(2):190-194. doi: 10.1111/all.12075
3. Homburger HA, Hamilton RG: Allergic diseases. In: McPherson RA, Pincus MR, eds. Henry's Clinical Diagnosis and Management by Laboratory Methods. 24th ed. Elsevier; 2022:chap 56
4. Klemans RJ, van Os-Medendorp H, Blankestijn M, Bruijzeel-Koomen CA, Knol EF, Knulst AC: Diagnostic accuracy of specific IgE to components in diagnosing peanut allergy: a systematic review. Clin Exp Allergy. 2015 Apr;45(4):720-730. doi: 10.1111/cea.12412

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 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. Phadia; Rev 02/2024)

PDF Report

No

Day(s) Performed

Monday through Friday

Report Available

Same day/1 to 3 days

Specimen Retention Time

14 days

Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Superior Drive

Fees & 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 account representative. For assistance, contact Customer Service.

Test Classification

This test has been cleared, approved, or is exempt by the US 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
PEAN	Peanut, IgE	6206-7

Result ID	Test Result Name	Result LOINC® Value
PEAN	Peanut, IgE	6206-7