Test Definition: BLWX

Walnut-Food Components, IgE, Serum
(Non-Orderable)

Overview

Useful For

Only orderable as a reflex. For more information see BLWRF / Walnut-Food, IgE, with Reflex to Walnut-Food Components, IgE, Serum.

Evaluation of patients with suspected walnut-food allergy to one of 2 walnut-food components

Testing Algorithm

If the total walnut-food IgE result is 0.10 kU/L or more, then the walnut-food component (Jug r 1 and Jug r 3) testing is performed at an additional charge.

Method Name

Only orderable as a reflex. For more information see BLWRF / Walnut-Food, IgE, with Reflex to Walnut-Food Components, IgE, Serum.

Fluorescent Enzyme Immunoassay (FEIA)

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Only orderable as a reflex. For more information see BLWRF / Walnut-Food, IgE, with Reflex to Walnut-Food Components, IgE, Serum.

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube:
Preferred: Serum gel
Acceptable: Red top
Submission Container/Tube: Plastic vial
Specimen Volume: 1 mL Serum
Collection Instructions: Centrifuge and aliquot serum into a plastic vial.

Specimen Minimum Volume

Serum: 0.6 mL

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	
	Frozen	90 days	

Clinical & Interpretive

Clinical Information

Allergies to tree nuts are relatively prevalent and can result in severe reactions. The main culprits in tree nut allergies include walnut, almond, pistachio, cashew, pecan, hazelnut, macadamia, Brazil nut, and pine nuts. Tree nut allergy often appears in young children and estimates of prevalence range from 0.1% to greater than 5% of the population, dependent on geographical region.

In the case of nut-induced allergic reactions, as with many other foods, symptoms usually present within minutes of ingestion. Over 80% of reactions to tree nuts involve allergy related respiratory symptoms. Tree nut allergies are one of the most dangerous types of allergic reaction with 20% to 40% of cases of related anaphylaxis and 70% to 90% of fatalities attributable to nut exposure (including peanut exposure).

Walnut is a relatively common cause of allergic reactions to tree nuts. with an overall population occurrence of 0.7%. Allergy to walnut is often persistent over a lifetime and can be severe. Walnuts can cause sensitization by means of walnut pollens/dust particles in processing industries. Allergy related common symptoms observed are nausea, vomiting, pruritus, abdominal pain urticaria, angioedema, diarrhea, asthma, and anaphylaxis. Walnuts and pecans are related species and there is significant potential for cross-reactively between them.

Jug r 1 is a prevalent component protein associated with systemic walnut allergy. In a study observed among patients with systemic allergic reactions to walnuts (n=16), 75% showed IgE binding to Jug r 1 Jug r 1 is the most specific and has the highest positive predictive value for walnut allergic and thus is considered the major component protein for walnut allergy diagnosis. than other walnut food allergenic components. Jug r 1 is the major component considered for diagnosing allergy to walnut. It is a persistent storage protein component (2s albumin), that is both heat and digestion stable. Cross-reactivity of 2S albumins with those of other plant sources, such as black walnut, Brazil nut, pecan, mustard, Corylus (common hazel), and sesame, may occur.

Jug r 3 is a lipid transport protein (LTP), that is also a major allergen in walnut. This protein is also resistant to heat/digestion. This component allergen is associated with the risk of severe reactions (food-induced contact urticaria,

oral allergy syndrome, gastrointestinal symptoms, and anaphylaxis). Approximately 75% of individuals with walnut allergy show reactivity to this component.

Significant association of the presence of IgE antibodies between Jug r 3 (walnut) and Cor a 8 (hazelnut) suggests potential for co-sensitization. Other foods that also contain LTP proteins, such as peach, cherry, hazelnut, almond, and peanut (Ara h 9 component) may also exhibit cross reactivity and co-sensitization to individuals with IgE antibodies against Jug r 3.

Positive antibody to total walnut specific testing may be observed with concurrent negative Jug r 1 and Jug r 3 component protein antibody testing may occur when there is sensitization to other walnut component proteins and/or pollens containing profilins and other proteins.

Reference Values

Only orderable as a reflex. For more information see BLWRF / Walnut-Food, IgE, with Reflex to Walnut-Food Components, IgE, Serum.

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

Concentrations of 0.70 kU/L or more (class 2 and above) will flag as abnormally high.
Reference values apply to all ages.

Interpretation

When detectable total walnut-food IgE antibody is present (> or =0.10 IgE kUa/L), additional specific component IgE antibody testing will be performed. If at least one potential specific allergenic walnut-food component IgE is detectable (> or =0.10 IgE kUa/L), an interpretive report will be provided.

When the sample is negative for total walnut-food IgE antibody (<0.10 IgE kUa/L), further testing for specific walnut-food component IgE antibodies will not be performed. Negative IgE results for total walnut-food antibody may indicate a lack of sensitization to potential walnut-food allergenic components.

Cautions

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

Negative results for IgE antibodies to walnut and walnut allergenic components do not completely exclude the possibility of clinically relevant allergic responses upon exposure.

Positive results for IgE antibodies to walnut or any potential walnut allergenic components are not diagnostic for walnut allergy and only indicate patient may be sensitized to walnut or a cross-reactive allergen.

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

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.

Cross-reacting carbohydrate determinants may also result in positive total walnut specific IgE testing.

Clinical Reference

1. Salo PM, Arbes SJ Jr, Jaramillo R, et al. Prevalence of allergic sensitization in the United States: results from the National Health and Nutrition Examination Survey (NHANES) 2005-2006. J Allergy Clin Immunol. 2014;134(2):350-359. doi:10.1016/j.jaci.2013.12.1071
2. Waserman S, Watson W. Food allergy. Allergy Asthma Clin Immunol. 2011;7 Suppl 1(Suppl 1):S7
3. Abrams EM, Sicherer SH. Diagnosis and management of food allergy. CMAJ. 2016;188(15):1087-1093. doi:10.1503/cmaj.160124
4. Weinberger T, Sicherer S. Current perspectives on tree nut allergy: a review. J Asthma Allergy. 2018;11:41-51. doi:10.2147/JAA.S141636
5. Lomas JM, Jarvinen KM. Managing nut-induced anaphylaxis: challenges and solutions. J Asthma Allergy. 2015;8:115-123. doi:10.2147/JAA.S89121
6. Maloney JM, Rudengren M, Ahlstedt S, Bock SA, Sampson HA. The use of serum-specific IgE measurements for the diagnosis of peanut, tree nut, and seed allergy. J Allergy Clin Immunol. 2008;122(1):145-151. doi:10.1016/j.jaci.2008.04.014
7. Sicherer SH, Burks AW, Sampson HA. Clinical features of acute allergic reactions to peanut and tree nuts in children. Pediatrics. 1998;102(1):e6. doi:10.1542/peds.102.1.e6
8. Crespo JF, James JM, Fernandez-Rodriguez C, Rodriguez J. Food allergy: nuts and tree nuts [published correction appears in Br J Nutr. 2008 Feb;99(2):447-8]. Br J Nutr. 2006;96 Suppl 2:S95-S102
9. Yang L, Clements S, Joks R. A retrospective study of peanut and tree nut allergy: Sensitization and correlations with clinical manifestations [published online ahead of print, 2015 Feb 27]. Allergy Rhinol (Providence). 2015;doi:10.2500/ar.20105.6.0108
10. Pastorello EA, Farioli L, Pravettoni V, et al. Lipid transfer protein and vicilin are important walnut allergens in patients not allergic to pollen. J Allergy Clin Immunol. 2004;114(4):908-914 . doi:10.1016/j.jaci.2004.06.020
11. Rosenfeld L, Shreffler W, Bardina L, et al. Walnut allergy in peanut-allergic patients: significance of sequential epitopes of walnut homologous to linear epitopes of Ara h 1, 2 and 3 in relation to clinical reactivity. Int Arch Allergy Immunol. 2012;157(3):238-245. doi:10.1159/000327841
12. Masthoff LJ, Hoff R, Verhoeckx KC, et al. A systematic review of the effect of thermal processing on the allergenicity of tree nuts. Allergy. 2013;68(8):983-993. doi:10.1111/all.12185
13. Costa J, Carrapatoso I, Oliveira MB, Mafra I. Walnut allergens: molecular characterization, detection and clinical relevance. Clin Exp Allergy. 2014;44(3):319-341. doi:10.1111/cea.12267
14. Valcour A, Lidholm J, Borres MP, Hamilton RG. Sensitization profiles to hazelnut allergens across the United States. Ann Allergy Asthma Immunol. 2019;122(1):111-116.e1. doi:10.1016/j.anai.2018.09.466

15. Asero R, Piantanida M, Pravettoni V. Allergy to LTP: to eat or not to eat sensitizing foods? A follow-up study. Eur Ann Allergy Clin Immunol. 2018;50(4):156-162. doi:10.23822/EurAnnACI.1764-1489.57

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. Phadia; Rev 06/2020)

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

Test Definition: BLWX

Walnut-Food Components, IgE, Serum
(Non-Orderable)

86008 x2

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
BLWX	Walnut-Food Components, IgE, S	63486-5

Result ID	Test Result Name	Result LOINC® Value
INBLW	Walnut-Food IgE Ab Interpretation	69048-7
R1JUG	Jug r 1 (Walnut-Food), IgE, S	81790-8
R3JUG	Jug r 3 (Walnut Extract), IgE, S	81789-0