Test Definition: SESPF

Sesame Seed, IgE, with Reflex to Sesame Seed Component, IgE, Serum

Overview

Useful For

Evaluating patients with suspected sesame seed allergy

Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
SESPR	Sesame Seed Component, IgE, S	No	No

Testing Algorithm

Testing begins with analysis of total sesame seed IgE. If the sesame seed total IgE result is negative (<0.10 kU/L), testing is complete.

If the sesame seed total IgE result is 0.10 kU/L or more, then sesame seed component (Ses i 1) testing will be performed at an additional charge.

Special Instructions

- Allergens - Immunoglobulin E (IgE) Antibodies

Highlights

The determination of the relative amount of IgE antibody to total sesame seed, and IgE antibodies to specific sesame seed component, can aid in assessment of the potential strength and type of allergenic response to sesame seed.

IgE antibody to total sesame seed extract will be initially tested.

If total sesame seed IgE antibody is detectable (> or =0.10 kU/L), additional sesame seed component testing (Ses i 1) will be performed.

Method Name

Fluorescent 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

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube:
Preferred: Serum gel
Acceptable: Red top
Submission Container/Tube: Plastic vial
Specimen Volume: 0.6 mL Serum
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

Serum: 0.4 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

De novo IgE sensitization to *Sesamum indicum* (sesame) seed and related products, such as sesame seed oil, can occur in both children and adults.(1-3) In the United States, 0.21% of children and 0.24% of adults have reported convincing sesame allergy, but this varies around world.(4,5) While sesame allergy is the ninth most common childhood food allergy in the United States, it is the third most common food allergy in Israel, with a prevalence of 0.93% in children.(1,4,6) The allergy commonly lasts for life, with only 20% to 30% of children gaining tolerance to sesame seed.(7-9) The median age onset for sesame allergy is 1 year.(7) The use of whole sesame seed and its derivatives in food and health products is growing worldwide.(2,6,10)

Sesame seed contains many components capable of eliciting an allergic response.(3,11,12) A prospective multicenter

European investigation suggests that sesame seed can cause allergic reactions that are more severe compared to other common seeds and nuts.(13). In one study (n=16), 56% of patients developed urticaria while 38% presented with anaphylaxis after exposure to sesame seed.(14) However, rhinitis and asthma have also been reported.(1-3) Ses i 1 is the major allergenic component of sesame.(12,15). 2S albumins, like Ses i 1, are extremely stable proteins, able to withstand temperatures up to 100 degrees C, acidic conditions, and pepsin digestion.(16,17) Consequently, immunological exposure to these proteins is thought to occur directly in the gut, resulting in sensitization or an allergic response.(16,17) Seven sesame seed components are registered by the joint World Health Organization/International Union of Immunological Societies Allergen Nomenclature Subcommittee including Ses i 1 and Ses i 2 (2S albumin proteins), Ses i 3 (7S vicilin-like globulin), Ses i 4 and Ses i 5 (oleosins), and Ses i 6 and Ses i 7 (11S globulins).(11) Ses i 1 is the major allergenic component of sesame.(12,15)

Of all sesame protein components, serum IgE antibodies against Ses i 1 are the most useful for diagnosis of sesame allergy(15,18,19) Measurement of IgE against Ses i 1 for the diagnosis of sesame allergy was shown to have a sensitivity and specificity of 86.1% and 85.7%, respectively, using a cutoff of 3.96 kUa/L.(15) Comparatively, measure of IgE against sesame extract (cutoff of 7.97 kUa/L) had a similar sensitivity of 83.3%, but a much lower specificity of 48.2% due to known cross-reactivity with peanut and tree nuts/seeds.(15,17,19) In the same study, it was shown that 92% of symptomatic patients were sensitized to Ses i 1, while only 32% of nonsymptomatic patients were sensitized.(15)

Despite minor homology between 2S albumins, crossreactivity with other 2S albumin proteins still exists, such as those found in sesame seed, hazelnuts, peanuts, English walnuts, Brazil nuts, cashews, pistachios, poppyseed, or rapeseed.(3,17) For example, Ses i 1 and Ses i 2 are related the peanut allergens Ara h 2, 6, and 7.(17) Sesame seed allergy can coexist with peanut and tree nut allergies, and co-sensitization with these allergens, alongside kiwi and rye, have been reported.(3,9,13,17) There is varying prevalence of sesame seed and tree nut/peanut related allergy coexistence. Sesame seed allergy coexists with 15% to 54% of self-reported peanut allergies, 8% to 14.8% of tree nut allergies, and 50% to 54% of patients who have both tree nut and peanut allergies.(9,13)

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

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

Interpretation

If the total serum IgE antibody against sesame seed is detectable (> or =0.10 IgE kUa/L), it is possible the patient has been sensitized to the components of sesame seed or other potential substances with cross activity. An additional test

utilizing Ses i 1, a specific allergenic sesame seed component IgE antibody, will be performed to further confirm sensitization to sesame seed.

If the total serum IgE antibody against sesame seed is negative (<0.10 IgE kUa/L), the patient lacks detectable sensitization to sesame seed components. A report will be provided without additional testing performed. An oral food challenge may be helpful in the diagnosis of sesame seed allergy.(20,21)

Cautions

Positive results for IgE antibody against total sesame seed IgE or specific component IgE indicate the sensitization to sesame seed or cross-reactive allergen only. Cross-reactivity and co-sensitization have been documented between allergens in sesame seed and various other foods, including, but not limited to, peanuts, hazelnuts, walnuts, black walnuts, cashews, macadamia nuts, pistachios, kiwis, rye, and poppy seeds. A positive result cannot be exclusively used for diagnosis of sesame seed-related allergy.(20,21)

Negative results of total antibody against sesame seed IgE or sesame seed specific IgE antibody components only suggest the absence of sensitization to potential allergenic components of sesame seeds. A negative result does not exclude the possibility of allergy to sesame seeds.

IgE antibody testing may not offer useful results in patients previously treated with immunotherapy to ascertain residual clinical sensitivity or in cases where the medical management does not rely on the identification of allergen specificity.

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

Clinical Reference

1. Dalal I, Goldberg M, Katz Y. Sesame seed food allergy. Curr Allergy Asthma Rep. 2012;12(4):339-345
2. Adatia A, Clarke AE, Yanishevsky Y, Ben-Shoshan M. Sesame allergy: current perspectives. J Asthma Allergy. 2017;10:141-51
3. Patel A, Bahna SL. Hypersensitivities to sesame and other common edible seeds. Allergy. 2016;71(10):1405-1413
4. Warren CM, Chadha AS, Sicherer SH, et al. Prevalence and severity of sesame allergy in the United States. JAMA network open. 2019;2(8):e199144-e199144
5. Sokol K, Rasooly M, Dempsey C, et al. Prevalence and diagnosis of sesame allergy in children with IgE-mediated food allergy. Pediatr Allergy Immunol. 2020;31(2):214
6. Ziegler JB, Aalberse RC. Sesame: an increasingly popular word and common food allergen. J Allergy Clin Immunol: Pract. 2020;8(5):1689-1691
7. Cohen A, Goldberg M, Levy B, Leshno M, Katz Y. Sesame food allergy and sensitization in children: the natural history and long-term follow-up. Pediatr Allergy Immunol. 2007;18(3):217-223
8. Gupta RS, Lau CH, Sita EE, Smith B, Greenhawt MJ. Factors associated with reported food allergy tolerance among US children. Ann Allergy Asthma Immunol. 2013;111(3):194-198
9. Tuano KTS, Dillard KH, Guffey D, Guffey D, Davis CM. Development of sesame tolerance and cosensitization of sesame allergy with peanut and tree nut allergy in children. Ann Allergy. 2016;117(6):708-710
10. US Food and Drug Administration. Allergic to Sesame? Food Labels Now Must List Sesame as an Allergen. Updated January 10, 2023. Accessed August 20, 2026. Available at www.fda.gov/consumers/consumer-updates/allergic-sesame-food-labels-now-must-list-sesame-allergen

11. WHO/IUIS Allergen Nomenclature Sub-Committee. Sesamum indicum-All Allergen. Accessed August 20, 2026. Available at www.allergen.org/search.php?allergensource=Sesamum+indicum
12. Pastorello EA, Varin E, Farioli L, et al. The major allergen of sesame seeds (Sesamum indicum) is a 2S albumin. J Chromatogr B Biomed Sci Appl. 2001;756(1-2):85-89
13. Brough HA, Caubet JC, Mazon A, et al. Defining challenge-proven coexistent nut and sesame seed allergy: a prospective multicenter European study. J Allergy Clin Immunol. 2020;145(4):1231-1239
14. Segal L, Ben-Shoshan M, Alizadehfar R, et al. Initial and accidental reactions are managed inadequately in children with sesame allergy. J Allergy Clin Immunol Pract. 2017;5(2):482-485
15. Maruyama N, Nakagawa T, Ito K, et al. Measurement of specific IgE antibodies to Ses i 1 improves the diagnosis of sesame allergy. Clin Exp Allergy. 2016;46(1):163-171
16. Moreno FJ, Clemente A. 2S albumin storage proteins: what makes them food allergens?. Open Biochem J. 2008;2:16-28
17. Dreskin SC, Koppelman SJ, Andorf S, et al. The importance of the 2S albumins for allergenicity and cross-reactivity of peanuts, tree nuts, and sesame seeds. J Allergy Clin Immunol. 2021;147(4):1154-1163
18. Yanagida N, Ejiri Y, Takeishi D, et al. Ses i 1-specific IgE and sesame oral food challenge results. J Allergy Clin Immunol Pract. 2019;7(6):2084-2086
19. Saf S, Sifers TM, Baker MG et al. Diagnosis of sesame allergy: Analysis of current practice and exploration of sesame component Ses i 1. J Allergy Clin Immunol Pract. 2020;8(5):1681-1688
20. Sato S, Yanagida N, Ebisawa M. How to diagnose food allergy. Curr Opin Allergy Clin Immunol. 2018;18(3):214-221
21. Foong RX, Dantzer JA, Wood RA, Santos AF. Improving Diagnostic Accuracy in Food Allergy. J Allergy Clin Immunol Pract. 2021;9(1):71-80

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 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 AB; 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

Test Definition: SESPF

Sesame Seed, IgE, with Reflex to Sesame Seed Component, IgE, Serum

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
SESPF	Sesame Seed Component Reflex, S	6242-2

Result ID	Test Result Name	Result LOINC® Value
SESA1	Sesame Seed, IgE, S	6242-2