

Galactose-alpha-1,3-galactose IgE

Test Name: Galactose-alpha-1,3-galactose IgE

Alternative Name: Alpha-Gal Specific IgE

Test Code: 30039

CPT Code: 86003

Clinical Utility: The Galactose-alpha-1,3-galactose (Alpha-Gal) IgE test more specifically defines the etiology of allergic responses to meat allergens in patients with a delayed onset of symptoms (3 to 6 hours after meal)⁽²⁾. IgE to Alpha-Gal is the likely cause of anaphylactic reactions in individuals who develop hypersensitivities to beef, pork and/or lamb as adults⁽³⁾.

Specimen Requirement:

- 1 mL of serum is required.
- Blood should be collected, allowed to clot completely and centrifuged.
- Specimen can be shipped at ambient temperature.

Background:

Typically, IgE antibodies specific for carbohydrate moieties are not known to cause clinically significant reactions⁽¹⁾. However, it has recently been shown that IgE antibodies specific for the carbohydrate Alpha-Gal found on non-primate mammalian proteins can induce significant anaphylaxis, angioedema or urticaria after consumption of red meat⁽²⁾. Skin prick tests to meat were weaker than expected given the severity of the reaction. The Alpha-Gal moiety can also be found on cow's milk protein, dog and cat dander, but not chicken or fish protein. Individuals with Alpha-Gal sensitivities typically develop the allergy as adults. In the United States there is a higher incidence of individuals with Alpha-Gal specific IgE in the southeast, including but not limited to Arkansas, Missouri, North Carolina, Tennessee and Virginia. There have also been occurrences of similar reactions reported in Australia⁽⁴⁾. The cause for developing IgE antibodies specific to Alpha-Gal is not completely understood but may be associated with tick bites^(3,4).

Units and Normal Reference Range:

The results are reported as kU/L of Alpha-Gal specific IgE. The reference range was established with a panel of sera obtained from normal individuals with no known prior exposure to Alpha-Gal and with no specific IgE to beef, pork and/or lamb. The level of Alpha-Gal specific IgE in these individuals was <0.35 kU/L. Viracor-IBT Laboratories has determined the performance characteristics of this test. It has not been approved or cleared by the FDA.

Method:

1. Solid phase immunoassay with alpha-galactose-1-3-galactose as the bound antigen.
2. Calibrated against total IgE standards from WHO Reference 75/502 to generate results in kilounits of IgE.

Related Tests: The following may be appropriate for some patients.

<u>Test Code</u>	<u>Description</u>
50510	Beef IgE
52310	Pork IgE
54103	Lamb IgE

References:

1. Altmann, F. The role of protein glycosylation in allergy. *Int Arch Allergy Immunol* 2009; 142: 99-115.
2. Commins, S.P., et. al., Delayed anaphylaxis, angioedema, or urticaria after consumption of red meat in patients with IgE antibodies specific for galactose- α -1,3-galactose. *J Allergy Clin Immunol* 2009; 123(2): 426-433.
3. Commins, S.P., et. al., Anaphylaxis syndromes related to a new mammalian cross-reactive carbohydrate determinant. *J Allergy Clin Immunol* 2009; 124(4): 652-657.
4. Van Nunen, S. A. et. al., An association between tick bite reactions and red meat allergy in humans. *Med J Aust* 2009; 190: 510-511.

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