
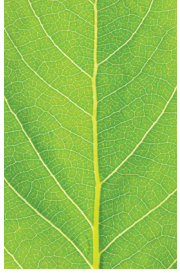


Test Summary
Utilization Guidelines

MILK COMPONENT ALLERGY PANEL
Available January 13, 2015

CLINICAL USE

PCL Alverno is pleased to announce that ImmunoCAP® milk component testing will be available starting January 13, 2015. The intended uses for component testing include the following: differentiating between the risk for persistent milk allergy and tolerance to milk allergens, evaluating the likelihood of a systemic reaction, and determining the necessary precautions that may be prescribed. If milk allergies are suspected or patient results for milk complete allergen extract (f2) are found to be positive, component testing may be warranted and can be ordered in combination with **or** as a reflex to milk allergy testing. Human IgE responses to cow's milk vary widely, therefore various sensitization patterns are likely to occur. The table below outlines the patterns of sensitization and discusses precautions that should be considered when assessing allergy management. It is important to note that allergy results are intended for specialist use and should correlate with clinical history, other laboratory findings, and in vivo reactivity to specific allergens.

α-lactalbumin *Bos d 4 / f 76*	β-lactoglobulin *Bos d 5 / f 77*	Casein *Bos d 8 / f 78*	Management Considerations
+	+	-	• Avoid fresh milk • Likely to tolerate baked milk products • Baked milk oral food challenge with a specialist may be appropriate • Likely to outgrow allergy
+	-	-	
-	+	-	
+/-	+/-	+	• Avoid all forms of cow's milk • Unlikely to become tolerant of cow's milk over time • Avoid cow's milk and baked milk products (yogurt, cookies, cakes), as well as products processed with milk (chocolate, sausage, potato chips)[7,8]

As in all diagnostic testing, a diagnosis should be made by the physician based on both test results and patient history.

CLINICAL BACKGROUND

ImmunoCAP® testing will comprise of a panel that is designed to detect IgE antibodies to three major cow's milk proteins: alpha-lactalbumin (f76), beta-lactoglobulin (f77), and casein (f78). Casein accounts for 75-80% of all milk protein and is the main protein constituent in cheese. In addition to milk and cheese, casein is found in dairy products and foods that contain milk. It is also commonly added to foods in the form of extenders, tenderizers, and nutritional fortifiers.

Alpha-lactalbumin (ALA) and beta-lactoglobulin (BLG) are classified as whey proteins and account for 25% and 50%, respectively, of total protein in the lactoserum fraction of milk. Cow's milk contains less ALA than human milk; however, protein fractions enriched with ALA are added to infant formula to supplement the benefit of human ALA. Formula

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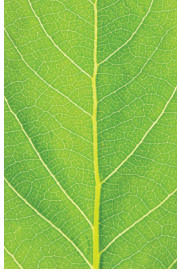


also contains BLG as the dominant whey protein, yet it is not found in human milk. Aside from its ability to transport hydrophobic molecules like vitamin A to the intestine, clear function for BLG has not been elucidated.

The following table summarizes the characteristics and risks associated with exposure to alpha-lactalbumin, beta-lactoglobulin, and casein.

CHARACTERISTICS OF INDIVIDUAL PROTEINS

Cow's milk *f 2*	α-lactalbumin *Bos d 4 / f 76*	β-lactoglobulin *Bos d 5 / f 77*	Casein *Bos d 8 / f 78*
• High levels of cow's milk IgE may predict the likelihood of sensitivity, but may not be solely predictive of reactions to baked milk or allergy duration[3]	• Susceptible to heat denaturation[4] • **HIGH RISK** of reaction to fresh milk[3,5] • **LOW RISK** of reaction to baked milk[3,5*] • Patient likely to "outgrow" milk allergy[6]	• Susceptible to heat denaturation[4] • **HIGH RISK** of reaction to fresh milk[3,5] • **LOW RISK** of reaction to baked milk[3,5*] • Patient likely to "outgrow" milk allergy[6]	• Resistant to heat denaturation[5] • **HIGH RISK** of reaction to all forms of milk[3,5,7] • Patient unlikely to "outgrow" milk allergy with high levels of specific IgE to casein[6]

*In clinical studies, extensively baked muffin, waffle, and cheese pizza were heated to the point of protein denaturation.

SPECIMEN REQUIREMENTS
Specimen: 1 mL serum (gel separator) or EDTA plasma (gel separator)
Stability: 2-8°C up to 7 days; otherwise freeze at -20°C

CAUSE FOR REJECTION
Insufficient quantity

METHOD
Fluorescent Enzyme Immunoassay (FEIA)

REFERENCE RANGE
<0.35 kU_A/L

TURNAROUND TIME
Monday, Wednesday, Friday (Day Shift Only)

CPT CODES*
86003 x3 (Component Panel Only)

*CPT codes provided are for informational purposes only. Questions regarding coding should be directed to the payor.

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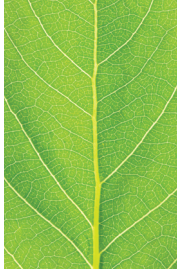


References

1. Eckman J, Saini S, Hamilton R. Diagnostic evaluation of food-related allergic diseases. *Allergy Asthma Clin Immunol.* 2009;5(1):2. **2.** Thermo Fisher Press Release. Data on file. Kalamazoo, MI. **3.** Shek LP, Bardina L, Castro R, Sampson HA, Beyer K. Humoral and cellular responses to cow milk proteins in patients with milk-induced IgE-mediated and non-IgE-mediated disorders. *Allergy.* 2005;60(7):912-919. **4.** Wal JM. Bovine milk allergenicity. *Ann Allergy Asthma Immunol.* 2004;93(5 Suppl 3):S2-S11. **5.** Nowak-Wegrzyn A, Bloom KA, Sicherer SH, et al. Tolerance to extensively heated milk in children with cow's milk allergy. *J Allergy Clin Immunol.* 2008;122(2):342-347. **6.** Sicherer SH, Sampson HA. Cow's milk protein-specific IgE concentrations in two age groups of milk-allergic children and in children achieving clinical tolerance. *Clin Exp Allergy.* 1999;29(4):507-512. **7.** Boyano-Martínez T, García-Ara C, Pedrosa M, Díaz-Pena JM, Quirce S. Accidental allergic reactions in children allergic to cow's milk proteins. *J Allergy Clin Immunol.* 2009;123(4):883-888. **8.** Yman. Allergic reactions to casein/doses. http://www.slv.se/upload/dokument/risker/allergi/Allergic_reactions_milk.pdf. Accessed May 8, 2013.

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