

Biological Allergens: Occupational Exposure to Protein Allergens

Background: Workers may be exposed to a variety of biological molecules (usually proteins) that can lead to immunologically-based disease. Generally, a patient's exposure to these substances is directly related to their occupation but occasionally these molecules are present in the patient's home or school environment. The mechanism of the immunopathology may involve any one of the Gell-Coombs reactions but the following tests are only useful in detecting Type I Hypersensitivities involving allergen-specific IgE. Adverse reactions based on activated T-Cells (Type IV) and IgG (Types II and III) have been reported but such testing is considered investigational.

Allergen Name	Test #	Origin and Nature of Material	Use and Exposure
Abachi Wood Dust	140310	Triplochiton scleroxyn ; Rk212	Tree grows in West Africa. Used by wood-workers.
Acacia Gum	84210	Also called Arabic gum, Acacia Senegal, Vegetable gums are high polymer carbohydrates, Rf297	Food Processing
Alkalase	84710	Proteolytic Enzyme from B. Subtilis; A broad spectrum endopeptidase; Rk205 (also, Alkalase)	Detergents (0.5-1.0%); Enzyme is heat and alkalai stable
Alpha-Amylase	185010	Enzyme hydrolyzes alpha 1 - 4 linkages in polysaccharides; k87	Starch processing; brewing; baking
Artemisia salina	84310	Brine Shrimp; Ro202	Tropical fish food; Aquarium hobby
Bromelain	88610	Protease purified from plant in pineapple family. Sulphydryl enzyme; Cross-reaction with papain; Rk202 (also Bromelin)	Used in the biomedical and the food beverage processing industry
Carageenan Gum*	87310	Vegetable gum	
Carmine Dye	184110	Natural dye from the insect, Dactylopius cossus	Red dye in foods and drugs
Carob Gum	42710	Locust Bean; Ceratonia siliqua; Rf 296	
Castor Bean	86010	Ricinus communis (Oil and beans); k71	Cosmetics; hair oils; paints; lubricants; inks
Chymopapain	140210	Carica payapya plant; sulfhydryl protease	Herniated disc surgery; Cross reacts with papain
Cotton Fiber (Crude)	85010	o1	Textile workers
Cotton Seed	182510	Rk83	Used to prepare oil and meal.
Daphnia	84410	Fish food; Ro207	Tropical fish food
Ficus	67110	Weeping fig plant; k81	Indoor plantings
Grain Weevil	93510	Sitophilus granarius; Ri202	Grain and mill workers
Green Coffee Bean	86110	Cofea arabica and C. liberica; k70	Coffee workers; food processing; dock workers
Guar Gum	87410	Cyamopsis tetragonolobus; Rf 246	Pharmaceutical; food thickener; emulsions; cosmetics; cosmetics
Isphaghula	83910	Psyllium Seed; k 72	Nurses and health car workers; patients taking this as laxative
Karaya Gum*	88210	Sterculia urens (Indian vegetable)	Colostomy paste; Tragacanth substitute

Lactase*	86410	Disaccharidase (Hydrolyzes lactose)	Used as food supplement for patients with lactose intolerance
Latex	84010	H. Braziliensis latex; k82	Health care workers; surgery patients with lactose tolerance
Lysozyme	84510	Enzyme dissolves bacterial cell wall mucopolysaccharide, Rk208	
Maxatase	140410	Enzyme; Rk204	Detergent manufacturer
Mealworms	140510	Tenebrio mollitor; Ro211	Grain worker exposure
Papain	88110	Carica payapya plant; sulfhydryl protease; Rk201	Pharmaceutical and beverage industry
Pepsin	140610	Proteolytic enzyme; Rk213	Biomedical laboratory worker
Phospholipase	93410	Enzyme Rk203	
Poppy Seed	49510	Papaver somniferum; Rf224	Pharmaceutical workers exposed to straw and other raw materials from plant
Protamine	140110	Reverse Anti-Coagulation Drugs	
Red Cedar Sawdust*	89010	J. virginiana	Mill workers; Woodworkers & hobbyists
Redwood Sawdust*	88810	Sequoia spp.	Mill workers, Woodworkers & hobbyists
Savinase	84810	Enzyme / Profease from B. licheniformis; Rk206	Used in laundry detergents
Silk	86210	Bombyx mori; k74	Textiles
SilkWaste	188710	From Bombyx mori; k73	Textiles
Sunflower Seed	182610	K84	Bird feeders
Tetramin	84610	Fish food; Ro203	Tropical fish hobbyists
Tobacco	71410	Ro210; Tabacco Leaf	Tabacco farmers and production workers
Tragacanth Gum	86510	Astragalus gummifer, Rf 298	Printing Industry
Xanthan Gum*	90010	Polysaccharide produced by bacteria	Thickening and suspending agent used in pharmaceuticals and foods

Related Tests (Lab Bulletins Available)

- Bird Fanciers
- Bakers' Asthma

Method: ImmunoCAP® by Pharmacia Diagnostics (except where noted with (*))

Units Reported: kilounits of IgE/L **Specimen:** 2.0 mL serum per 10 tests. Specimens shipped at ambient temp.

Reference Range: < 0.35 kU/L **CPT Code:** 86003

Selected References:

- Bardana EJ, Montanaro A, O'Hollaren MT. Occupational Asthma, Hanley & Belfus, Philadelphia, 1992
- Bardana EJ and Montanaro A. Occupational Asthma and Related Disorders, In Clinical Immunology, Principles and Practice, Second Edition, Edited by Rich RR et al

For more information, contact
IBT Laboratories
11274 Renner Boulevard, Lenexa, Kansas 66219
913.492.2224 800.637.0370
www.ibtlabs.com