

Abstract

Many people have allergic reactions to food. Most food allergies cause non-severe reactions but some responses are severe or life-threatening. Since there is not a cure for food allergies the protocol is to avoid foods that contain the specific allergen. The United States and European Union have strict guidelines on labeling. The eight most common food allergens are: milk, eggs, fish, crustacean shellfish, tree nuts, peanuts, wheat and soybeans. There are many more food allergens in existence these are just the most recognized. A limited study was performed by obtaining allergen-free labeled products purchased from several different retail stores in the US. Analysis of these products was performed using ELISA technology.

Procedure

Overview

Products making statements on packaging or label claims indicating contents were allergen free for either one or several allergens were sourced locally. Products were purchased at local retailers off the shelf. The products were received as samples and analyzed at Trilogy Analytical Laboratory in Washington, Missouri. Determinations were made only on the allergens that were noted as a label claim. Almond was chosen as a determination for tree nut to evaluate the “Nut Free” claim. This does not include all types of nuts, however it was simply chosen as the indicator for this survey.

General Procedure and Methodology

Samples requiring particle size reduction were prepared by grinding to a fine consistency (40 mesh screen size). All samples were thoroughly mixed and extracted by the method as described in the manufacturer's instructions. Samples were extracted and analyzed in a timely fashion, either the same day or within 24 hours. Control determinations were made with each run. Runs were approved based on the acceptance of the curve and daily control sample results falling within defined ranges. Methods used were R-Biopharm ELISA kits. Shown below are product numbers and quantitation limits for each method.

Gluten	Milk	Peanut	Almond	Soy	Egg
RIDASCREEN Gliadin	RIDASCREEN FAST Milk	RIDASCREEN FAST Peanut	RIDASCREEN FAST Almond	RIDASCREEN FAST Soya	RIDASCREEN FAST Egg
Kit # R7001	Kit # R4652	Kit # R6202	Kit # R6901	Kit # R7102	Kit # R6402
5 ppm quantitation	2.5 ppm quantitation	2.5 ppm quantitation	2.5 ppm quantitation	2.5 ppm quantitation	0.50 ppm quantitation

Results

Label claims in this study were confirmed in all but three of the products tested. All sample matrices were easily evaluated and no sample interference across any of the sample types were observed.

Products Purchased Off the Shelf	Label Claim	Analysis Performed	Results					
			Gluten					
Chocolate Chip Muffin Mix	Gluten Free	Gluten	< 5 ppm					
Granola Mix	Gluten Free	Gluten	< 5 ppm					
Confetti Cake Mix	Gluten Free	Gluten	< 5 ppm					
Brownie Mix	Gluten Free	Gluten	< 5 ppm					
Cookie Mix	Gluten Free	Gluten	< 5 ppm					
Muscle Building Protein Shake	Gluten Free	Gluten	< 5 ppm					
Peanut Butter Puffs	Gluten Free	Gluten	< 5 ppm					
Coconut Flour	Gluten Free	Gluten	< 5 ppm					
Almond Flour	Gluten Free	Gluten	< 5 ppm					
Instant Mashed Potato Mix	Gluten Free	Gluten	< 5 ppm					
Instant Hash Browns	Gluten Free	Gluten	< 5 ppm					
			Gluten	Total Milk	Peanut	Almond	Soy	
Vanilla Protein Shake	Gluten Free, Dairy Free	Gluten, Total Milk	< 5 ppm	< 2.5 ppm				
Tapioca Flour	Gluten Free, Dairy Free	Gluten, Total Milk	< 5 ppm	< 2.5 ppm				
Chocolate Chip Cookie Mix	Gluten Free, Peanut Free, Tree Nut Free,	Gluten, Peanut, Total Milk	< 5 ppm	< 2.5 ppm	< 2.5 ppm			
Coconut Milk	Gluten Free, Dairy Free, Soy Free	Gluten, Total Milk, Soy	< 5 ppm	< 2.5 ppm			< 2.5 ppm	
Soft Baked Chocolate Chip Cookies	Gluten Free, Nut Free, Soy Free	Gluten, Almond, Soy	< 5 ppm				< 2.5 ppm	< 2.5 ppm
			Gluten	Total Milk	Peanut	Almond	Soy	
Pretzels	Gluten Free, Peanut Free, Tree Nut Free,	Gluten, Peanut, Almond, Total Milk,	< 5 ppm	< 2.5 ppm	< 2.5 ppm	< 2.5 ppm	< 2.5 ppm	
Brownie Mix (second brand)	Gluten Free, Nut Free, Dairy Free, Soy Free	Gluten, Almond, Peanut, Total Milk,	< 5 ppm	< 2.5 ppm	< 2.5 ppm	< 2.5 ppm	< 2.5 ppm	
			Gluten	Total Milk	Peanut	Almond	Soy	Egg
Flour Blend	Gluten Free, Peanut Free, Tree Nut Free, Dairy Free, Soy Free, Egg Free	Gluten, Peanut, Almond, Total Milk, Soy, Egg	< 5 ppm	< 2.5 ppm	< 2.5 ppm	< 2.5 ppm	4.0 ppm	< 0.5 ppm
Rice Flour (brand A)	Gluten Free, Peanut Free, Tree Nut Free, Dairy Free, Soy Free,	Gluten, Peanut, Almond, Total Milk, Soy, Egg	< 5 ppm	< 2.5 ppm	< 2.5 ppm	< 2.5 ppm	6.1 ppm	< 0.5 ppm
Rice Flour (brand B)	Gluten Free, Peanut Free, Tree Nut Free, Dairy Free, Soy Free, Egg Free	Gluten, Peanut, Almond, Total Milk, Soy, Egg	< 5 ppm	< 2.5 ppm	< 2.5 ppm	< 2.5 ppm	7.7 ppm	< 0.5 ppm

Conclusion

In this limited study of “Allergen Free” labeled off the shelf products, the label claims were confirmed in every instance with the exception of the flour products. Two rice flours and one flour blend (which also contained rice flour) were all positive at low levels for soy. The products tested covered a variety of products and overall showed compliance with the stated labels. Future study possibilities include a survey of rice flour, and rice flour containing products with an emphasis on soy determinations.