

Using SuperSnap™ and AllerSnap™ to Indicate General Allergen Presence

Introduction

Food facilities can estimate and verify cleaning efficiency from allergens by running specific allergen ELISA tests or by using approximation tests such as Hygiena SuperSnap™ and AllerSnap™ to measure allergens and other potential contaminants. The ELISA is a specific test that detects very low levels of particular allergens, but it is time-consuming, complex and expensive. Hygiena researchers showed that, while not approaching the level of detection of ELISAs, general allergen and sensitive ATP monitors can determine the potential presence of allergens at levels low enough to justify further investigation. The food matrix containing a specific allergen has other analytes like ATP or generic proteins that allow allergen removal through cleaning.

Results and Discussion

Researchers compared a range of ELISA tests for allergens against the EnSURE™ Monitoring System with the SuperSnap ATP hygiene monitoring device and the AllerSnap Surface Residue Test. Eleven major allergens were tested in a variety of foods to determine minimal levels needed for detection.

Of the allergens tested, only almonds were detectable at lower or equal levels than ELISA testing by SuperSnap and AllerSnap instruments. Currently, only gluten/gliadin has a regulatory level – 20 ppm – below which is considered “gluten free,” as well as 100 ppm, which is considered “low gluten.” For all other allergens, it is no consensus as to what levels can trigger health issues in sensitive people. The table below shows the lowest concentration, in either parts per million or parts per billion, at which potential allergen could be detected (ranges indicate variances in sources of allergen):

TABLE 1: ELISA, SuperSnap and AllerSnap results—detection concentration levels

Allergen	ELISA test	SuperSnap	AllerSnap
Gluten/gliadin	8 ppm	63-83 ppm	630-830 ppm
Almond	15-23 ppm	15-23 ppm	15-23 ppm
Soy	10 ppm	20 ppm	100-650 ppm
Sesame	2 ppm	7-41 ppm	59 ppm
Pistachio	1 ppm	8 ppm	2.75 ppm
Peanut	1 ppm	52 ppm	52 ppm
Hazelnut	1 ppm	1 – 12 ppm	12 ppm
Egg (albumin)	25 ppm	42-52 ppm	89 ppm
Cashews	1 ppm	<1 – 61 ppm	<1 – 100 ppm
B-lactoglobulin (milk)	10 ppb	16-738 ppb	623 – 1,000 ppb
Shellfish	25 ppb	25 ppm	36 ppm

Conclusions

While the ELISA test is the definitive method of determining minute amounts of specific allergen, it may not always be needed to determine whether food residue containing allergens are contaminating a surface. The SuperSnap and AllerSnap tests deliver results in seconds, and are sensitive enough to determine the presence of a protein or ATP at low enough levels to be used as proxy measurements for the specific allergen. Concentrations of allergen will vary in food types, indicating that good cleaning verification can be quickly achieved to a similar degree as a specific allergen test.