TECHNICAL DATA SHEET
PROTEON EGG EXPRESS

Scope

PROTEON EGG EXPRESS is an immunochromatographic test in the form of rapid strips for the detection of egg proteins in foods and surfaces. The test is based on the detection of ovalbumin, which is one of the most allergenic protein in egg. White egg represents 49% of the egg proteins, and ovalbumin is the major protein of white egg (54%).

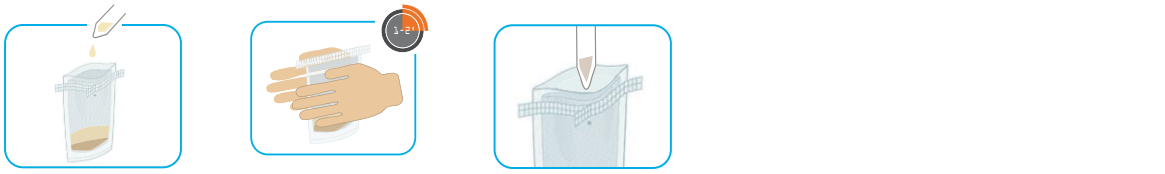
Applicability

The Proteon Egg Express test can be applied to detect egg proteins in solid and liquid foods, rinse waters and work surfaces.

Test procedure

Detailed information on the procedure is available in the product script.

Analysis of food and rinse waters

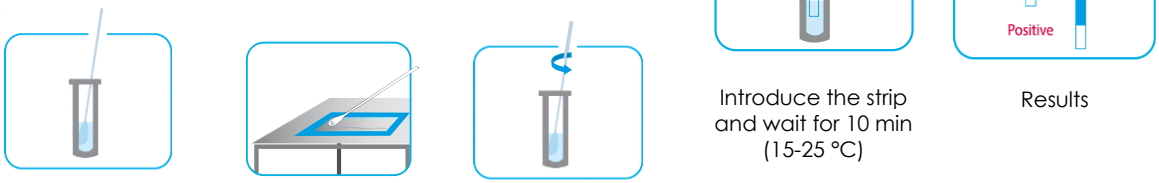


1g/10 ml AB
1 mL/9 ml AB

Rub the mixture
1-2 min approx

Collect the
filtered sample

Analysis of surfaces



Dip a swab in
0.5 ml of AB

Swab the surface

Stir

Introduce the strip
and wait for 10 min
(15-25 °C)

Results

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Analytical parameters of the test

Table 1. Analytical parameters of the Proteon Egg Express test

Detection limit in food[1]	0.5 ppm egg proteins
Detection limit on surfaces[2]	0.2 µg egg proteins
Working range[3]	0.5-5000 ppm egg proteins

[1]The detection limit of the test is calculated using the POD (Probability of detection) method.

[2]In the application of work surfaces the detection limit was calculated by analyzing a stainless steel surface.

[3]Concentrations above 40 g/kg of protein can give negative results. It is recommended to carry out an additional dilution in the extraction phase of these samples.

The detection limit was confirmed by analyzing different matrices fortified with powder egg NIST 8445. Among the validated matrices are juices, liqueurs, ice creams, infant formulas, yogurts, vegetable drinks, salad dressings, sausage and pate.

The effect of thermal processing was analyzed by studying the detection of egg powder in matrices before undergoing thermal treatment. These matrices were made in the pilot plant of the University of Zaragoza, simulating industrial manufacturing conditions. The detection level was located at 5 ppm of egg powder in cooked matrices (sausages), 10 ppm of egg in baked matrices (sliced bread) and 500 ppm of egg in sterilization processes (pâté).

Specificity

Specificity was evaluated against a panel of basic ingredients. The results are shown in Table 2. All these matrices were analyzed in parallel with the Sandwich ELISA test against ovalbumin to confirm the absence of egg proteins.

Table 2. Results of the specificity assays of the Proteon Egg Express test

Ingredient	*Result*	*Ingredient*	*Result*	*Ingredient*	*Result*
Raw almond	NEGATIVE	Sesame	NEGATIVE	Pea	NEGATIVE
Cashew	NEGATIVE	Buckwheat	NEGATIVE	Kiwi	NEGATIVE
Walnut	NEGATIVE	Oats	NEGATIVE	Carrot	NEGATIVE
Pecan nut	NEGATIVE	Wheat	NEGATIVE	Coconut	NEGATIVE
Brazil nut	NEGATIVE	Corn	NEGATIVE	Cocoa	NEGATIVE
Pistachio	NEGATIVE	Rye	NEGATIVE	Lecithin	NEGATIVE
Hazelnut	NEGATIVE	Barley	NEGATIVE	Hake	NEGATIVE
Poppy seeds	NEGATIVE	Chickpeas	NEGATIVE	Chicken	NEGATIVE
Pumpkin seeds	NEGATIVE	Lentils	NEGATIVE	Milk	NEGATIVE
Pinions	NEGATIVE	Soy	NEGATIVE		
Sunflower seeds	NEGATIVE	Beans	NEGATIVE		

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Conversion factors

Table 3. Conversion factors between egg and egg proteins.

Whole egg	Total proteins	White proteins	Ovalbumin
1 ppm	0.48 ppm	0.28 ppm	0.15 ppm

Bibliography

AACC, C., (2000). Approved methods of the American association of cereal chemists. Method 10-50D, Methods, 54, pp. 21.

Appendix F: Guidelines for Standard Method Performance Requirements. Official Methods of Appendix M: Validation Procedures for Quantitative. Food Allergen ELISA Methods: Community Guidance and Best Practices. AOAC 2012 (http://www.eoma.aoac.org/app_m.pdf)

Analysis (2016), AOAC INTERNATIONAL, Rockville, MD, USA (http://www.eoma.aoac.org/app_f.pdf)

Guidance on food allergen management for food manufactures (2013), Food and Drink Europe, Brussels, Belgium (http://www.fooddrinkeurope.eu/uploads/press-releases_documents/temp_file_FINAL_Allergen_A4_web1.pdf)

Standard Method Performance Requirements (SMPRs®) for Detection and Quantitation of Selected Food Allergens. AOAC SMPR 2016.002. AOAC INTERNATIONAL, Rockville, MD, USA (https://www.aoac.org/aoac_prod_imis/AOAC_Docs/SMPRs/SMPR%202016_002.pdf).

Quality Certificate of Powder Egg NIST 8445

De Luis R, Mata L, Estopañán G, Lavilla M, Sánchez L and Pérez MD. Evaluation of indirect competitive and double antibody sandwich ELISA tests to determine β-lactoglobulin and ovomucoid in model processed foods. Food and Agricultural Immunology 2008; 19 (4): 339-350.

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