TECHNICAL DATA SHEET
PROTEON HAZELNUT EXPRESS

Scope

PROTEON HAZELNUT EXPRESS is an immunochromatographic test in the form of rapid strips for the detection of hazelnut proteins which uses the protein Cor a 9 as an indicator, as it is one of the main allergenic properties in hazelnut. This protein is resistant to heat treatments.

Applicability

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

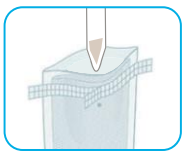
Test procedure

Detailed information on the procedure is available in the product script. The test procedure is presented schematically below:

Analysis of food and rinse waters

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

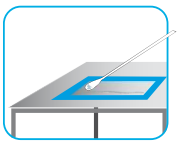
Rub the mixture
1-2 min approx



Collect the
filtered sample

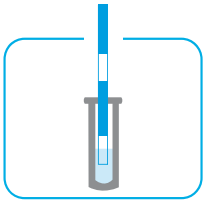
Analysis of surfaces

Dip a swab in
0.5 ml of AB

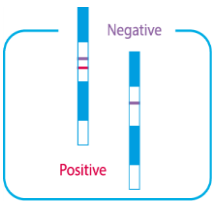


Swab the surface

Stir



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



Results

ZEULAB, S.L. • C/Bari, 25 dpdo. 50197 Zaragoza (SPAIN) • +(34) 976 731 533 • info@zeulab.com • www.zeulab.com

Analytical parameters of the test

Table 1. Analytical parameters of the Proteon Hazelnut Express test

Detection limit in food[1]	0.6 ppm hazelnut proteins
Detection limit on surfaces[2]	1 µg hazelnut proteins
Working range[3]	0.6-10000 ppm hazelnut 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 10 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 effect of thermal processing was analyzed by studying the level of detection in baked cookies made with known levels of hazelnuts following the guidelines of the AACC (2000). Hazelnut protein levels of up to 2 ppm protein were detected.

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 Cor a 9 to confirm the absence of hazelnut proteins.

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

Ingredient	*Result*	*Ingredient*	*Result*	*Ingredient*	*Result*
Raw almond	NEGATIVE	Corn	NEGATIVE	Apple	NEGATIVE
Cashew	NEGATIVE	Rye	NEGATIVE	Peach	NEGATIVE
Walnut	POSITIVE*	Barley	NEGATIVE	Orange	NEGATIVE
Pecan nut	POSITIVE*	Rice	NEGATIVE	Banana	NEGATIVE
Brazil nut	NEGATIVE	Chickpeas	NEGATIVE	Trout	NEGATIVE
Pistachio	NEGATIVE	Green peas	NEGATIVE	Tuna	NEGATIVE
Chestnut	NEGATIVE	Soy	NEGATIVE	Pork	NEGATIVE
Pinions	NEGATIVE	Lentils	NEGATIVE	Calf	NEGATIVE
Sesame	NEGATIVE	Peanut	NEGATIVE	Chicken	NEGATIVE
Pumpkin seeds	NEGATIVE	Cocoa	NEGATIVE	Egg	NEGATIVE
Buckwheat	NEGATIVE	Carrot	NEGATIVE	UHT milk	NEGATIVE
Oats	NEGATIVE	Kiwi	NEGATIVE		
Wheat	NEGATIVE	Melon	NEGATIVE		

*Cross reaction <0.1% (The test can give a positive result above 100 ppm of walnut and pecan nut)

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Conversion factors

Table 3. Conversion factors between hazelnut and hazelnut proteins.

Hazelnut	Hazelnut proteins
1 ppm	0.12 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 Analysis (2016), AOAC INTERNATIONAL, Rockville, MD, USA (http://www.eoma.aoac.org/app_f.pdf)

Appendix M: Validation Procedures for Quantitative Food Allergen ELISA Methods: Community Guidance and Best Practices. Official Methods of Analysis (2012), AOAC INTERNATIONAL, Rockville, MD, USA (http://www.eoma.aoac.org/app_m.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)

BEDCA. Bases de datos Española de composición de alimentos. https://www.bedca.net/bdpub/index.php