PRODUCT INFORMATION SHEET

Response PT Hazelnut: 5 processed Samples Hazelnut (not roasted), Nut Butter (roasted), Nut Spread with Cocoa, Nut Nougat and Nut Crocant

PT originated REFERENCE MATERIAL (RM)

Description of the RM

Name / Material of related PT	*DLA ptALR1 (2022) Hazelnut: 5 processed Samples Hazelnut (not roasted), Nut Butter (roasted), Nut Spread with Cocoa, Nut Nougat and Nut Crocant in Potato Powder Matrix (and a "blank sample")*
Identifier / LOT	*RM 2022-ALR1 Set*
Expiry date	*January 2027*
Matrix	*Potato Powder*
Physical description	*Powder*
Packaging / weight	*Sealed foil pouche / 20 g*
Storage conditions	*room temperature, long term cooled 2 - 10°C (dry and dark)*
Name and address manufacturer	***DLA - Proficiency Tests GmbH*** *Hauptstr. 80, 23845 Oering, Germany* *Tel. ++49-(0)4532-9183358, Fax. ++49(0)4102-9944976* *eMail. pt@dla-lvu.de, website. www.dla-lvu.de*

Composition of Material

PT-Sample series	Sample 1 Nut Crocant	Sample 2 Nut Cocoa Spread	Sample 3 Nut Nougat	Sample 4 Hazelnut, raw	Sample 5 Hazelnut, roasted	Sample 6 „blank“
Ingredients	**g/100 g**	**g/100g**	**g/100g**	**g/100g**	**g/100g**	**g/100g**
Potato powder Ingredients: potato, E471, E304, E223, E100 Nutrients per 100 g: Protein 8,3 g, carbohydrates 76 g, fat 0,6 g, salt 0,15 g	75	75	75	75	75	75
Maltodextrin	25	25	25	25	25	25
Allergen-Premixes Ingredients: maltodextrin (75% - 92%), sodium sulfate (< 6%), silicon dioxide (< 3%), processed allergen products (each 1,0% - 10% hazelnut)	0,081	0,41	0,12	0,041	0,041	-
Allergen-Contents	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
*Nut Crocant** (20% Hazelnut and sugar/glucose) Protein 3,8% ** *(5 products, Europe)*	199	-	-	-	-	-
*Nut Spread with Cocoa** (12% Hazelnut and other ingredients) Total protein 5,4 % *** *(7 products, Europe)*	-	343	-	-	-	-
*Nougat** (33% Hazelnut and other ingredients) Total protein 6,7 % *** *(6 products, Europe)*	-	-	124	-	-	-
*Hazelnut, unroasted** Protein 13,0% ** *(10 products, Europe)*	-	-	-	41,9	-	-
*Hazelnut, roasted** Protein 14,1% ** *(10 products, Europe)*	-	-	-	-	41,4	-
– *as Hazelnut*	39,7	41,2	40,9	41,9	41,4	-
Extended combined uncertainty (k=2) of hazelnut-content (= ± 11 %)	± 4,37	± 4,53	± 4,50	± 4,61	± 4,55	-

*Allergen contents as „total food“ as described in column ingredients according to gravimetric mixture
** Protein contents according to laboratory analysis of raw material mixtures (total nitrogen according to Kjeldahl with F=5,30 for hazelnut protein)
***Protein content calculated according to the declaration of the products (besides hazelnut, other protein sources are included)

Minimum Sample Size

A minimum sample size of 5 g is recommended for sample preparation.
The homogeneity tests were performed with sample sizes of 5 g (Microtracer analysis).
The mixture homogeneity before bottling was examined 8-fold by microtracer analysis. Homogeneity was sufficient with probabilities of ≥ 25% (excellent mixtures) and HorRat values in or slightly above the range of acceptance (0,3 to 1,3) (for more details see final report of PT).

Reference Values

All reference values were derived from the related PT round (for more details see final report).

Reference Values qualitative ELISA

	Sample 1 Nut Crocant	Sample 2 Nut Cocoa Spread	Sample 3 Nut Nougat	Sample 4 Hazelnut, raw	Sample 5 Hazelnut, roasted	Sample 6 „blank“
Number positive	12	12	12	11	12	1
Number negative	0	0	0	1	0	11
Percent positive	100	100	100	92	100	8
Percent negative	0	0	0	8	0	92
Consensus value	positive	positive	positive	positive	positive	negative
Spiking	positive	positive	positive	positive	positive	negative

Methods:

BF = MonoTrace ELISA, BioFront Technologies

ES = ELISA-Systems

MI-II = Morinaga Institute ELISA Kit II

RS-F= Ridascreen® Fast, R-Biopharm

SP = SensiSpec ELISA Kit, Eurofins

VT = Veratox, Neogen

Note: For all processed hazelnut products (samples 1 to 5) positive consensus values were obtained by the ELISA-methods.

Reference Values qualitative PCR

	Sample 1 Nut Crocant	Sample 2 Nut Cocoa Spread	Sample 3 Nut Nougat	Sample 4 Hazelnut, raw	Sample 5 Hazelnut, roasted	Sample 6 „blank“
	pos/neg	pos/neg	pos/neg	pos/neg	pos/neg	pos/neg
Number positive	4	6	5	5	6	1
Number negative	2	0	1	1	0	5
Percent positive	67	100	83	83	100	17
Percent negative	33	0	17	17	0	83
Consensus value	none	positive	positive	positive	positive	negative
Spiking	positive	positive	positive	positive	positive	negative

Methods:

ASU = ASU §64 Methode/method

MS = Microsynth

SFA = Sure Food ALLERGEN, R-Biopharm / Congen

div = not indicated / other method

Note: For the processed hazelnut products (samples 2 to 5) positive consensus values were obtained by the PCR-methods. Due to the number of < 75% concordant results, no consensus value was obtained for sample 1 containing nut crocant. There were 2 negative results obtained by the ASU method (official german method).

Reference Values quantitative ELISA

For sample 1 (nut crocant) 100% of the recovery rates of the ELISA methods were in the range of acceptance of 50-150%. On average the highest recovery rates were obtained for raw hazelnuts (sample 4), followed by roasted hazelnuts (sample 5) and nut crocant (sample 1) . For nut cocoa spread (sample 2) and nougat (sample 3), lower responses were observed with two recovery rates below 50% each.
For more details see final report and dot-plot presentation of samples 1-5 on the following pages.

Reference Values quantitative PCR

Using PCR methods, three participants provided quantitative results. The highest recovery rates were obtained for raw hazelnuts (sample 4), followed by roasted hazelnuts (sample 5). For nut crocant (sample 1), nut cocoa spread (sample 2) and nougat (sample 3), lower responses were observed.
For more details see final report and dot-plot presentation of samples 1-5 on the following pages.

Intended Use

- for laboratory use only, no food!
- validation of analytical methods
- control sample for quality control charts
- test material for inter-laboratory comparisons
- no medical use

Storage Instructions and Handling Information

The material should be stored as stated on page 1. Before use of the material should be warmed up to room temperature. The content should be mixed thoroughly prior to subsampling (see minimum sample size above). The material should be weighed immediately after opening of the foil pouche/bottle and closed again afterwards in order to avoid uptake of moisture. Frequent freezing and thawing should be avoided as this can lead to changes in the properties of the material. The expiry date of this RM is based on the current knowledge and applies only for proper storage conditions in the originally closed foil pouche/bottle.

Safety Precautions

The usual laboratory safety precautions should be applied when working with the RM considering the type of ingredients, parameters and its concentration.

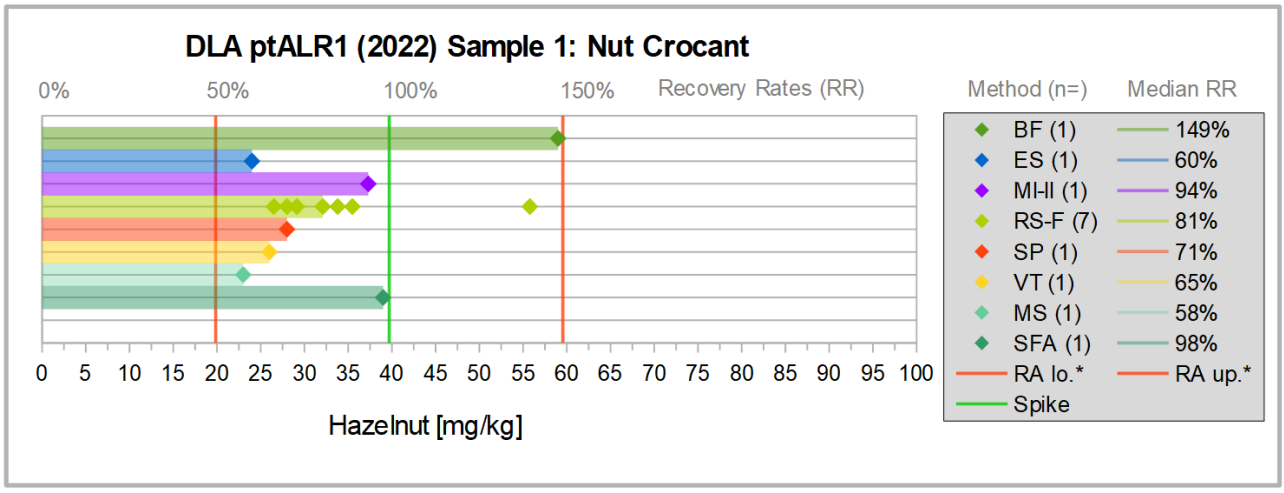
Data Source

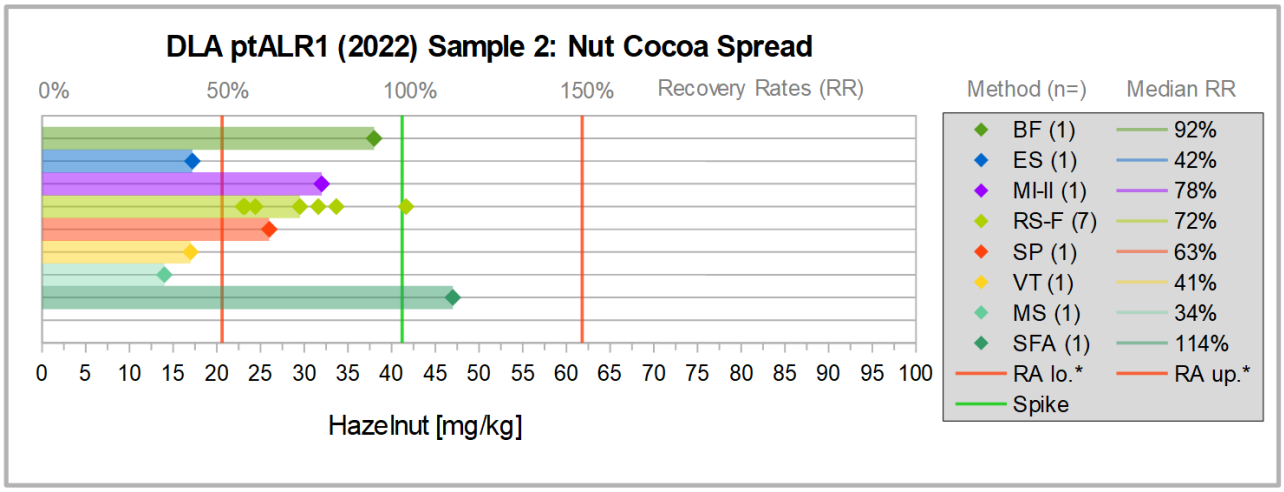
The material was analyzed by 13 laboratories within the related proficiency test (PT). Different analytical methods have been used.

Various

The user must determine the suitability of this RM for its particular purpose. DLA makes no warranty of any kind, expressed or implied, other than its products meet all quality control standards set by DLA. We do not guarantee this product can be used for a special application.

Median of recovery rates (for information only)





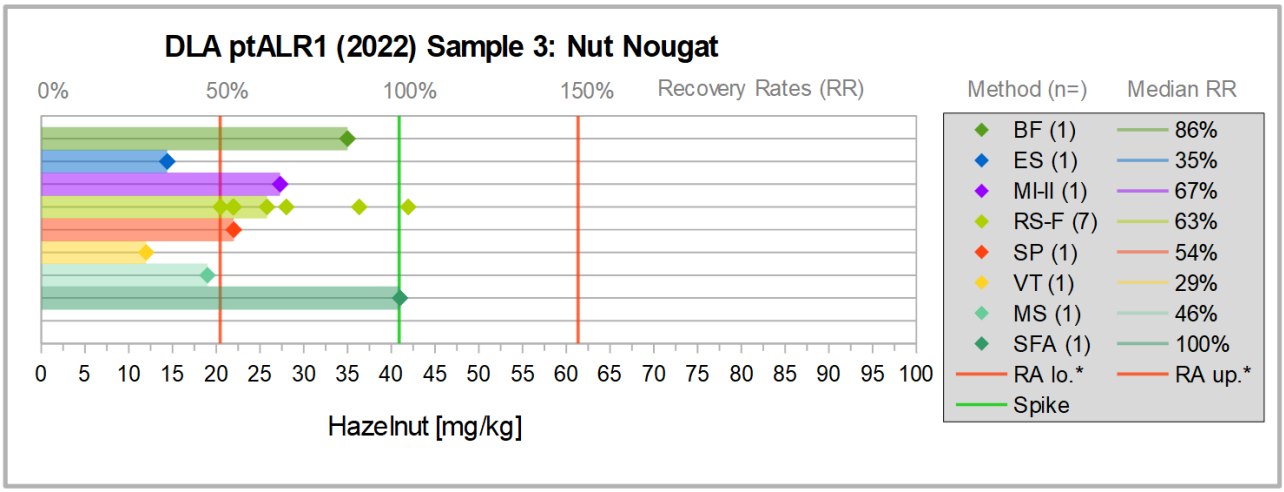
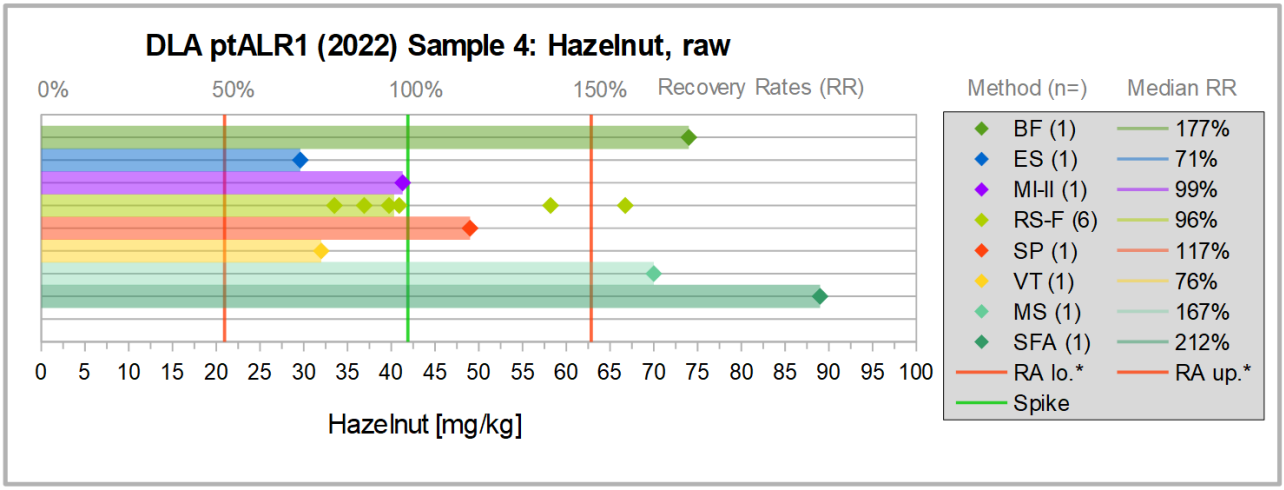


Fig. 1: Hazelnut Allergen Recovery Rates (ELISA + PCR methods) - Dot plot of single results (Samples 1-3 separated according to methods with indication of the median recovery rate), lower scale content in mg/kg, upper scale recovery rate in % with * acceptance range of 50% - 150% (* range of acceptance: RA lower limit to RA upper limit)



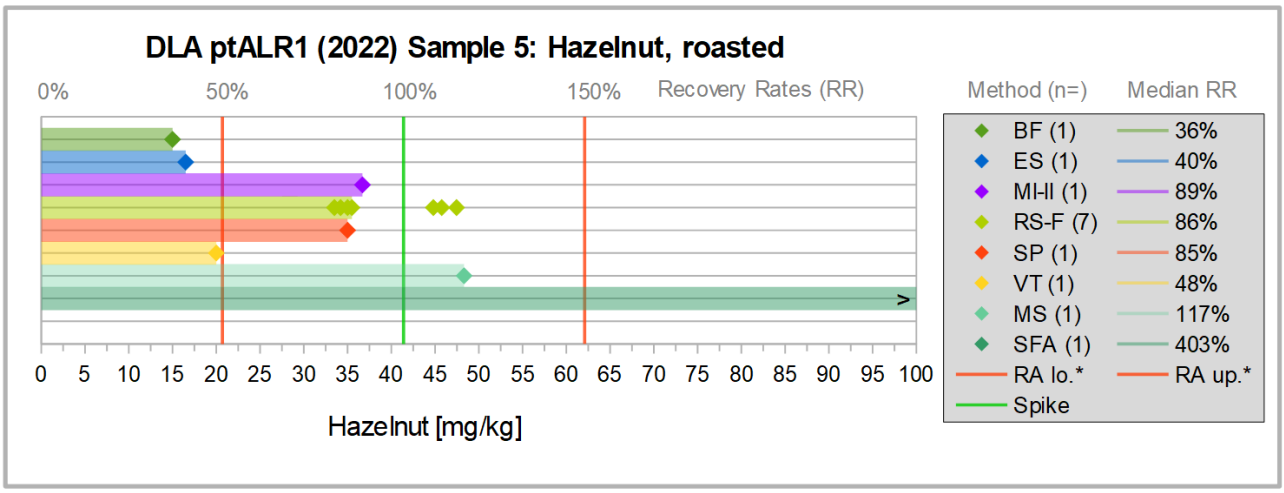


Fig. 2: Hazelnut Allergen Recovery Rates (ELISA + PCR methods) - Dot plot of single results (Samples 4-5 separated according to methods with indication of the median recovery rate), lower scale content in mg/kg, upper scale recovery rate in % with * acceptance range of 50% - 150% (* range of acceptance: RA lower limit to RA upper limit)

approved (PT-Coordinator)	updated
Matthias Besler-Scharf, PhD	Ulrike Vorreiter
signed M. Besler-Scharf	*signed U. Vorreiter*
3 June 2024	5 February 2026