

SureFood® ALLERGEN kits

Qualitative and quantitative real-time PCR analysis



Automated DNA preparation



4plex Allergen test kits



Qualitative detection and quantification

More information:



<https://r-b.io/fdallrgns>

Allergen analysis with real-time PCR

Food allergies are specific food intolerances, that can cause an immunological reaction. This can even lead to an anaphylactic shock which can prove fatal in some cases.

In accordance to REGULATION (EU) No 1169/2011 the food **ingredient** needs to be declared for consumer protection.



Labelling obligation in the EU:

1. Cereals containing gluten (i.e. wheat, rye, barley, oats, spelt, kamut) and products thereof*
2. Crustaceans and products thereof*
3. Eggs and products thereof*
4. Fish and products thereof*
5. Peanuts and products thereof*
6. Soya beans and products thereof*
7. Milk and products thereof (including lactose)*
8. Nuts, i.e. almond, hazelnuts, walnuts, cashews, pecan nuts, brazil nuts, pistachio nuts, macadamia nuts and queensland nuts and products thereof*
9. Celery and products thereof*
10. Mustard and products thereof *
11. Sesame seeds and products thereof *
12. Sulphur dioxide and sulphites at concentrations of more than 10 mg/kg or 10 mg/litre expressed as SO₂
13. Lupin and products thereof *
14. Molluscs and products thereof *

Reference:

Appendix 2 of EU Directive 2011/1169/EC

* Exception: certain matrices

Thus, different analytical methods can be used. With the detection of a listed ingredient, the food product needs to be labelled. Exceptionally, this is not necessary if the ingredient is largely removed during the production process (e.g. distillates or extracts).



Labelling obligation in the US:

In other countries, however, different regulations apply such as in the USA: crustaceans, eggs, milk, peanuts, tree nuts, wheat soya, sulfur dioxide.

And since April 2021:

almond, beech nut, brazil nut, butternut, cashew, chestnut, chinquapin, coconut, hazelnut, ginko nut, hickory nut, lichee nut, macadamia nut, pecan, pine nut, pistachio, sesame, sheanut, walnut.



Eggs and milk cannot be analyzed with the real-time PCR, but immunological methods can be used for that. Barely suitable or even unsuitable for the PCR analysis are highly processed and/or purified products as no more or very little DNA is present, e.g. vegetable oil, gelatin, lecithin or starch.



Real-time PCR workflow



DNA preparation

Manual – Spin filter based
SureFood® PREP Advanced

Semi-automated – Magnetic beads based
TANBead/SureFast® Mag PREP Food



qPCR

Qualitative

- Duplex – kits include an internal amplification control (IAC; FAM/HEX)
- Multiplex – 3 allergen targets and internal control

Quantitative

Duplex in combination with
SureFood® QUANTARD Allergen 40

Quantitative result interpretation

Reference material SureFood® QUANTARD Allergen 40 is extracted in parallel to the food sample.



Manual

Excel file supplied by CONGEN or R-Biopharm



Automated

RIDA®CYCLER Software

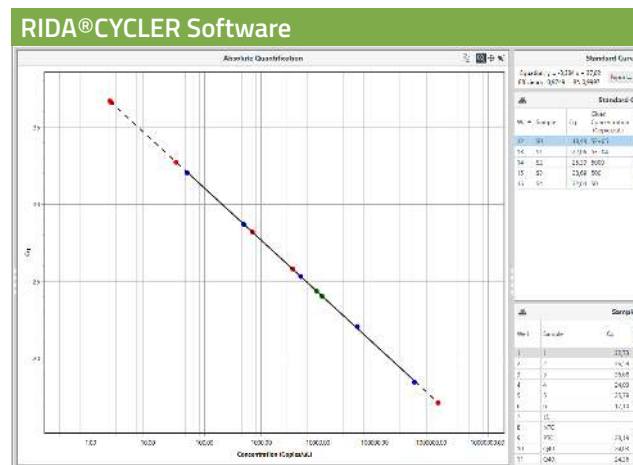


Table 1: Composition of SureFood® QUANTARD Allergen 40 adapted to EU Directive 2007/68/EC. It is based on corn flour material and the following potentially allergenic food ingredients in a concentration of 40 mg/kg.

Allergen	Food	Allergen	Food
Gluten containing cereals	Wheat flour type 405	Nuts	Hazelnuts, almonds, walnuts, cashew nuts, pecan nuts, brazil nuts, pistachio, macadamia nuts
Crustaceans	Black tiger shrimps	Celery	Celery seeds
Egg	Egg powder (hen)	Mustard	Mustards seeds, yellow
Fish	Salmon	Sesame	Sesame seeds
Peanut	Peanuts	Lupin	Lupin seeds
Soy	Soybeans	Buckwheat	Buckwheat
Milk	Milk powder (cow)		

Allergen analysis with real-time PCR

Comprehensive analysis with 4plex screening

Rapid comprehensive screenings are provided by a 4plex system. In one single measurement, even three parameters can be analyzed simultaneously. An included Internal Amplification Control (IAC) provides an inhibition control for each sample without any additional effort.

Channel	S3401	S3402	S3403
FAM	Mustard	Peanut	Macadamia
Cy5	Soya	Hazelnut	Brazil nut
ROX	Celery	Walnut	Pecan
VIC/HEX	IAC	IAC	IAC

SureFood® ALLERGEN kits

Product	Description	No. of test/amount	Art. No.
SureFood® PREP			
Advanced	For highly processed matrices (food and feed)	50 preparations	S1053
Extraction control detection kit			
SureFast® Animal+Plant Control 3plex	Extraction control for plant or animal matrix including internal control DNA (ICD)	100 reactions	F4053
SureFood® ALLERGEN – qualitative and/or quantitative real-time PCR			
Almond	LOD ≤ 0.4 mg/kg (ppm)	100 reactions**	S3604
Brazil nut	LOD ≤ 0.4 mg/kg (ppm)	100 reactions**	S3617
Cashew	LOD ≤ 0.4 mg/kg (ppm)	100 reactions**	S3615
Celery	LOD ≤ 0.4 mg/kg (ppm)	100 reactions**	S3605
Crustaceans	LOD ≤ 0.4 mg/kg (ppm)	100 reactions**	S3612
Fish	LOD ≤ 1.0 mg/kg (ppm)	100 reactions**	S3610
Gluten	LOD ≤ 0.4 mg/kg (ppm)	100 reactions**	S3606
Hazelnut	LOD ≤ 0.4 mg/kg (ppm)	100 reactions**	S3602
Insects	LOD ≤ 1.0 mg/kg (ppm)	100 reactions**	S3626 New
Lupin	LOD ≤ 0.4 mg/kg (ppm)	100 reactions**	S3611
Macadamia	LOD ≤ 0.4 mg/kg (ppm)	100 reactions**	S3616
Molluscs*	LOD ≤ 0.4 mg/kg (ppm)	100 reactions	S3613
Mustard	LOD ≤ 0.4 mg/kg (ppm)	100 reactions**	S3609
Peanut	LOD ≤ 0.4 mg/kg (ppm)	100 reactions**	S3603
Pecan	LOD ≤ 0.4 mg/kg (ppm)	100 reactions**	S3618
Pine	LOD ≤ 1.0 mg/kg (ppm)	100 reactions**	S3624 New
Pistachio	LOD ≤ 0.4 mg/kg (ppm)	100 reactions**	S3614
Sesame	LOD ≤ 0.4 mg/kg (ppm)	100 reactions**	S3608
Shea nuts	Available soon	100 reactions**	S3622 New
Soya	LOD ≤ 0.4 mg/kg (ppm)	100 reactions**	S3601
Walnut	LOD ≤ 0.4 mg/kg (ppm)	100 reactions**	S3607
SureFood® ALLERGEN – qualitative real-time PCR			
4plex Peanut/Hazelnut/Walnut + IAC	LOD ≤ 1.0 mg/kg (ppm)	100 reactions	S3402
4plex Soya/Celery/Mustard + IAC	LOD ≤ 0.4 mg/kg (ppm)	100 reactions	S3401
4plex Macadamia/Brazil nut/Pecan + IAC	LOD ≤ 0.4 mg/kg (ppm)	100 reactions	S3403
Buckwheat	LOD ≤ 0.4 mg/kg (ppm)	100 reactions	S3620
Oat	LOD ≤ 1.0 mg/kg (ppm)	100 reactions**	S7004
4plex Cereals (wheat/barley/rye)	LOD ≤ 1.0 mg/kg (ppm)	100 reactions	S7006
Laboratory reference material for quantification			
SureFood® QUANTARD Allergen 40	Corn flour contains 12 potential allergens in food except sulphite and lactose with concentration of 40 mg/kg. The material has been developed for PCR quantification of allergens in food	2 grams	S3301
SureFood® – qualitative real-time PCR			
Apricot	LOD ≤ 5 DNA copies	100 reactions	S7007

* Qualitative only.

** SureFood® QUANTARD Allergen 40 must be used for quantification.