

Summary Report

**for the ISO 16140-2 validation of
Assurance® GDS *Listeria* spp. Tq
for the detection of *Listeria* species in a broad range of
foods and environmental samples**

MicroVal study number	2010LR31
Method/Kit names	Assurance® GDS <i>Listeria</i> spp. Tq
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This report consists of 96 pages, including 8 appendices.
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The results in this report relate only to the item(s) submitted for testing.
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LIST OF ABBREVIATIONS LISTERIA

Method & protocol

ALOA or O&A	Agar <i>Listeria</i> Ottavani & Agosti
BHI	Brain Heart Infusion Broth
CFU	Colony Forming Units
h	hour
HFB	Half Fraser broth
ILS	Interlaboratory Study
MCS	Method Comparison Study
RLOD	Relative Level of Detection
TSA/YE	Tryptone Soya Agar with Yeast

Interpretation

AL	Acceptability Limit
alt	Alternative method
\bar{D}	Average difference
FN	False Negative results
FNR	False Negative Ratio
FP	False Positive results
FPR	False Positive Ratio
LOD	Limit of Detection
NA	Negative agreement
NA _{FN (alt)}	Negative Agreement due to false negative alternative-method results
ND	Negative Deviation
ND _{FN (alt)}	Negative Deviation due to false negative alternative-method results
PA	Positive Agreement
PA _{FP (alt)}	Positive Agreement due to false positive alternative-method results
PD	Positive deviation
PD _{FP(alt)}	Positive Deviation due to false positive alternative-method results
ref	Reference method
RT	Relative Trueness
SE	Relative Sensitivity
SP	Relative Specificity
TNA	Total Negative Agreement
TND	Total Negative Deviation

Raw data

- or neg(-)	Negative/no growth/no reaction/target not detected
(x)	Number of colonies in the plate
H+	Characteristic <i>Listeria</i> colonies with halo
H-	Characteristic <i>Listeria</i> without halo
i	Inhibition
<i>L. mono</i>	<i>L. monocytogenes</i>
<i>L. innoc</i>	<i>L. innocua</i>
<i>L. welsh</i>	<i>L. welshimeri</i>
<i>L. seeli</i>	<i>L. seeligeri</i>
na	Not applicable
ne	New DNA extraction
NC or NS	Non-characteristic colony
/ or nt	Not tested
st	Plate without any colony
Bold typing	Artificially inoculated samples

Modifications are highlighted.

Foreword

The technical protocol and the result interpretation were carried out according to the ISO 16140-2:2016, ISO 16140-2/A1:2024 and the MicroVal technical rules. This document is prepared in accordance with ISO 16140-2 and MicroVal technical committee interpretation of ISO 16140-2 v.2.6.

Validation protocol	<ul style="list-style-type: none"> ▪ ISO 16140-1:2016: Microbiology of the food chain - Method validation — <i>Part 1: Vocabulary</i> ▪ ISO 16140-2:2016 & ISO 16140-2/A1:2024: Microbiology of the food chain - Method validation — <i>Part 2: Protocol for the validation of alternative (proprietary) methods against a reference method</i> ▪ MicroVal technical committee interpretation of ISO 16140-2 v.2.6
Reference method ♦	ISO 11290-1:2017 - Microbiology of the food chain - Horizontal method for the detection and enumeration of <i>Listeria monocytogenes</i> and other <i>Listeria</i> spp. - Part 1: detection method
Method/Kit name	Assurance[®] GDS <i>Listeria</i> spp.Tq
Scope of validation	<ul style="list-style-type: none"> > Broad range of foods > Environmental samples
Certification organization	Lloyd's Register

♦ Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)

1 INTRODUCTION

This document reports a MicroVal validation study, based on ISO 16140-2:2016 and ISO 16140-2/A1:2024, of the Assurance® GDS *Listeria* spp. Tq, alternative method for the detection of *Listeria* species in a broad range of foods and environmental samples. The initial evaluation was carried out by ADRIA in 2014 as the MicroVal Expert Laboratory according to ISO 16140:2003.

In 2018, a renewal and an extension for the addition of Fresh produce and vegetable category was carried out according to ISO 16140-2:2016 by QLaboratories. In 2025, the inclusivity was completed with new *Listeria* spp strain, and the results were reanalysed according to the ISO 16140-2/A1:2024.

This renewal was carried out by ADRIA. This report combines all data from the initial validation and extension re-evaluated following ISO 16140-2/A1:2024 criteria.

The Assurance® GDS *Listeria* spp. Tq is an automated nucleic acid amplification system for the detection of *Listeria* species in a broad range of foods and environmental samples.

The reference method is: ISO 11290-1:2017 - Microbiology of the food chain - Horizontal method for the detection and enumeration of *Listeria monocytogenes* and other *Listeria* spp. - Part 1: detection method.

Scope of the validation study is a broad range of foods, and environmental samples.

Categories included:

- Meat products
- Milk and dairy products
- Fish and seafood products
- Fresh produce and vegetables
- Ready-to-eat, ready-to-reheat or ready-to-cook products
- Environmental samples

Criteria to be evaluated during the study:

- Method Comparison Study (MCS)
 - Sensitivity study
 - Relative level of detection
 - Inclusivity and exclusivity study
- Interlaboratory Study (ILS).

2 METHOD PROTOCOLS

The Method Comparison Study was carried out using 25 gram portions of sample material. For environmental samples, testing was conducted using environmental sponges or 25 g test portions.

2.1 Reference method[♦]

The reference method are the ISO 11290-1:1996/Amd.1:2004 for the initial validation study and the ISO 11290-1 (May 2017): Microbiology of the food chain - Horizontal method for the detection and enumeration of *Listeria monocytogenes* and of *Listeria spp.* - Part 1: detection method for the fresh Produce and Vegetables food types extension study.

See the flow diagram in **Appendix 1**.

Sample preparations used in the reference method and Assurance GDS *Listeria* species method was performed according to ISO 6887 – 4, ISO 11290-1:1996/Amd.1:2004 and ISO 11290-1:2017.

25 g test portion were used for the reference method.

2.2 Alternative method

See the flow diagram of the alternative method in **Appendix 2** and the kit insert in **Appendix 3**.

2.2.1 Principle

The alternative method principle is based on PCR.

The Assurance® GDS *Listeria spp. Tq* is an automated nucleic acid amplification system for the detection of *Listeria* species in a broad range of foods and environmental samples.

[♦] Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)

The food samples were prepared for analysis following an IMS concentration procedure as outlined in the Assurance GDS *Listeria* spp. Tq package insert. Results are available after 26 - 44 hours of enrichment.

The alternative method protocol is:

- Twenty-five (25) gram samples are enriched with 225 mL of Half Fraser Broth (HFB) and environmental sponges are enriched in 90 mL of Half Fraser Broth.
- Test portions are incubated at $30 \pm 1^\circ\text{C}$ for 24 ± 2 hours.
- Following enrichment, the sample is concentrated using the Assurance PickPen[®] device and then transferred into 0.5 mL of Half Fraser Broth.
- The HFB is sealed and incubated at $30 \pm 1^\circ\text{C}$ for 4 to 22 hours.
- Following incubation, the sample is concentrated using the PickPen device, lysed and a 30 μL aliquot of lysate is analyzed using the Assurance GDS Rotor-Gene[®] instrument.
- Confirmations following the ISO 11290-1:2017

It is possible to store the enriched samples for 72 h at $5 \pm 3^\circ\text{C}$ before performing the IMS step and confirmatory tests.

2.2.2 *Protocols applied during the validation study*

> **Enrichment**

The minimum incubation time was applied for the enrichment step: 22 h at $30 \pm 1^\circ\text{C}$.

> **Subculture**

The IMS and PCR were carried out after the incubation of HFB for 4 and 22 h at $30 \pm 1^\circ\text{C}$.

> **Confirmations**

For all samples, 10 μL of HFB was streaked on O&A and Palcam plates. Confirmations of ISO 11290-1:2017 were carried out on typical colonies.

➤ **Broth storage for 72h at 5 ± 3°C**

The enrichment broths from positive and discordant samples were tested after 72 h storage at 5 ± 3°C (PCR and confirmatory tests for unpaired with MICROGEN latex test to confirm the colonies and PCR with direct streaking only for paired samples).

2.3 Study design

For the 25 gram portions, the reference and the alternative method share the initial (pre)-enrichment step, therefore the same test portion (item) was used for the two methods. All resulting data were treated as paired data (EN-ISO 16140-2:2016).

3 METHOD COMPARISON STUDY

3.1 Sensitivity study

The sensitivity (SE) is the ability of the method to detect the analyte by either the reference or alternative method.

3.1.3 Categories and sample types

Five food categories and environmental samples category were included in this validation study. A minimum of 60 items for each category were tested by both the reference method and the alternative method in the sensitivity study, with a minimum of 30 positive samples per category.

Each category was made up of 3 types, with at least 20 items representative for that Type.

408 samples were analysed. The distribution of positive and negative samples per tested category and type is given respectively in Table 1.

Table 1 – Distribution per tested category and type

Categories	Types	Test portion	Positive sample	Negative samples	Total	
Meat products	a	Fresh meat (unprocessed)	25 g	12	12	24
	b	Cooked and cured meat products	25 g	10	12	22
	c	Fermented meat products	25 g	9	9	18
	<i>Total</i>			31	33	64
Milk and dairy products	a	Thermisation/pasteurized products	25 g	9	13	22
	b	Fermented/acidified products	25 g	7	12	19
	c	Raw milk-based products	25 g	14	12	26
	<i>Total</i>			30	37	67
Fish and seafood products	a	Fish and shellfish	25 g	10	8	18
	b	Cooked fishery products	25 g	11	11	22
	c	Smoked products	25 g	12	11	23
	<i>Total</i>			33	30	63
Ready-to-eat, ready-to-reheat or ready-to-cook products	a	Substantial raw ingredients	25 g	11	6	17
	b	Processed (cooked) products	25 g	11	7	18
	c	Refrigerated products	25 g	15	18	33
	<i>Total</i>			37	31	68
Environmental samples	a	Swabs and sponges	25 g	11	24	35
	b	Process water	25 g	10	13	23
	c	Dusts	25 g	9	7	16
	<i>Total</i>			30	44	74
Fresh produce and vegetables	a	Cut-ready-to-eat vegetables	25 g	12	12	24
	b	Produce grown in contact with the ground	25 g	12	12	24
	c	Cut ready-to-eat fruit	25 g	12	12	24
	<i>Total</i>			36	36	72
ALL CATEGORIES			197	211	408	

3.1.4 Test sample preparation

Naturally contaminated samples were preferentially analyzed. If necessary, artificial contaminations were obtained by spiking or seeding protocols.

For spiking, the strains were stressed using various injury protocols. The injury efficiency was evaluated by comparing enumeration results onto selective and non-selective agars (respectively O&A and TSYEA plates). The artificial contaminations are presented in **Appendix 4**.

For all studies, 121 samples were artificially contaminated, using 51 different strains with seeding or spiking protocols. 96 gave a positive result.
 A total of 101 samples were found naturally contaminated samples

For both artificially and naturally contaminated samples, the analyses recovered either *Listeria monocytogenes*, other *Listeria* species, or a combination of both.

The repartition of the positive samples per inoculation protocol and inoculation level is given in Table 2.

Table 2 - Repartition of the positive samples per inoculation protocol and inoculation level

Study	Naturally contaminated	Artificial contamination						Total
		Seeding protocol			Spiking protocol			
		≤ 3 CFU	3 < x ≤ 8.4 CFU	> 10 CFU	≤ 5 CFU	5 < x ≤ 10 CFU	> 10 CFU	
Initial validation study	94	5	21	2	20	14	5	161
Fresh produce and vegetables Extension study	7	0	29	0	0	0	0	36
Total	101	5	50	2	20	14	5	197
%	51.3%	2.5%	25.4%	1.0%	10.2%	7.1%	2.5%	100.0%

51.3 % of the samples were naturally contaminated.

3.1.5 Sensitivity study results

All raw data per category are given in **Appendix 5**. Sample numbers in **bold** indicate artificial inoculation of the sample (see **Appendix 4** for details on artificial inoculation).

Table 3 shows the summary of results of the reference method and the alternative methods for **all Categories**.

Table 4 shows the Interpretation of sample results between the reference and alternative method (based on the confirmed alternative method).

Table 3 – Summary of sensitivity study results – all categories

Response	22 + 4 h subculture		22 + 22 h subculture	
	Reference method positive (R+)	Reference method negative (R-)	Reference method positive (R+)	Reference method negative (R-)
Alternative method positive (A+)	Positive agreement (A+/R+) PA = 194	Positive deviation (R-/A+) PD = 1	Positive agreement (A+/R+) PA = 195	Positive deviation (R-/A+) PD = 2
Alternative method negative (A-)	Total Negative deviation (A-/R+) TND = 1 (1 ND_{FN(alt)})	Total Negative agreement (A-/R-) TNA = 212 (2 NA_{FN(alt)}, 1 PD_{FP(alt)})	Total Negative deviation (A-/R+) TND = 0	Total Negative agreement (A-/R-) TNA = 211 (1 NA_{FN(alt)})

With: $TND = PA_{FP(alt)} + ND + ND_{FN(alt)}$ $TNA = NA + NA_{FN(alt)} + PD_{FP(alt)}$

Table 4 – Summary of results obtained with the reference and alternative methods (after confirmation) of all samples for each category

Category	Incubation time	PA	PD	TND	TNA
1 Meat products	22 + 4 h	30	1	0	33
	22 + 22 h	30	1	0	33
2 Milk and dairy products	22 + 4 h	30	0	0	37
	22 + 22 h	30	0	0	37
3 Fish and seafood products	22 + 4 h	32	0	0	31
	22 + 22 h	32	1	0	30
4 Ready-to-eat, ready-to-reheat or ready-to-cook products	22 + 4 h	36	0	1	31
	22 + 22 h	37	0	0	31
5 Production environmental samples	22 + 4 h	30	0	0	44
	22 + 22 h	30	0	0	44
6 Fresh produce and vegetables	22 + 4 h	36	0	0	36
	22 + 22 h	36	0	0	36
Total short incubation time (22 + 4h)		194	1	1	212
Total long incubation time (22 + 22h)		195	2	0	211

3.1.6 Sensitivity study calculations

The sensitivity study parameters as specified in Table 5 were calculated for all categories and types, and the overview is given in Table 6.

Table 5 – Formula to calculate the sensitivity parameters

		22 + 4 h	22 + 22 h
Sensitivity for the alternative method	$SE_{alt} = \frac{(PA + PD)}{(PA + TND + PD)} \times 100 \%$	99.5 %	100.0 %
Sensitivity for the reference method	$SE_{ref} = \frac{(PA + TND)}{(PA + TND + PD)} \times 100 \%$	99.5 %	99.0 %
Relative trueness	$RT = \frac{(PA + TNA)}{N} \times 100 \%$	99.5 %	99.5 %
False positive ratio for the alternative method (paired evaluation)	$FPR = \frac{PD_{FP(alt)}}{TNA} \times 100 \%$	0.5 %	0.0 %
False negative ratio for the alternative method (paired evaluation)	$FNR = \frac{ND_{FN(alt)}}{PA+TND+PD} \times 100 \%$	1.5 %	0.5 %

Table 6 – Overview calculated sensitivity parameters per category and type

Category		Incubation time	Type	PA	PA _{FP(alt)}	NA	NA _{FN(alt)}	PD	ND	ND _{FN(alt)}	PD _{FP(alt)}	TND	TNA	SE _{alt} %	SE _{ref} %	RT %	FP %	FNR	
1	Meat products	22 + 4h	a Fresh meat (unprocessed)	12	0	12	0	0	0	0	0	0	12	100.0	100.0	100.0	0.0	0.0	
			b Cooked and cured meat products	9	0	12	0	1	0	0	0	0	0	12	100.0	90.0	95.5	0.0	0.0
			c Fermented meat products	9	0	9	0	0	0	0	0	0	0	9	100.0	100.0	100.0	0.0	0.0
			Total	30	0	33	0	1	0	0	0	0	0	33	100.0	96.8	98.4	0.0	0.0
		22 + 22h	a Fresh meat (unprocessed)	12	0	12	0	0	0	0	0	0	0	12	100.0	100.0	100.0	0.0	0.0
			b Cooked and cured meat products	9	0	12	0	1	0	0	0	0	0	12	100.0	90.0	95.5	0.0	0.0
			c Fermented meat products	9	0	9	0	0	0	0	0	0	0	9	100.0	100.0	100.0	0.0	0.0
			Total	30	0	33	0	1	0	0	0	0	0	33	100.0	96.8	98.4	0.0	0.0
2	Milk and dairy products	22 + 4h	a Thermisation/pasteurized products	9	0	13	0	0	0	0	0	0	13	100.0	100.0	100.0	0.0	0.0	
			b Fermented/acidified products	7	0	12	0	0	0	0	0	0	0	12	100.0	100.0	100.0	0.0	0.0
			c Raw milk-based products	14	0	12	0	0	0	0	0	0	0	12	100.0	100.0	100.0	0.0	0.0
			Total	30	0	37	0	0	0	0	0	0	0	37	100.0	100.0	100.0	0.0	0.0
		22 + 22h	a Thermisation/pasteurized products	9	0	13	0	0	0	0	0	0	0	13	100.0	100.0	100.0	0.0	0.0
			b Fermented/acidified products	7	0	12	0	0	0	0	0	0	0	12	100.0	100.0	100.0	0.0	0.0
			c Raw milk-based products	14	0	12	0	0	0	0	0	0	0	12	100.0	100.0	100.0	0.0	0.0
			Total	30	0	37	0	0	0	0	0	0	0	37	100.0	100.0	100.0	0.0	0.0
3	Fish and seafood products	22 + 4h	a Fish and shellfish	10	0	8	0	0	0	0	0	0	8	100.0	100.0	100.0	0.0	0.0	
			b Cooked fishery products	10	0	11	1	0	0	0	0	0	0	12	100.0	100.0	100.0	0.0	10.0
			c Smoked products	12	0	11	0	0	0	0	0	0	0	11	100.0	100.0	100.0	0.0	0.0
			Total	32	0	30	1	0	0	0	0	0	0	31	100.0	100.0	100.0	0.0	3.1
		22 + 22h	a Fish and shellfish	10	0	8	0	0	0	0	0	0	0	8	100.0	100.0	100.0	0.0	0.0
			b Cooked fishery products	10	0	11	0	1	0	0	0	0	0	11	100.0	90.9	95.5	0.0	0.0
			c Smoked products	12	0	11	0	0	0	0	0	0	0	11	100.0	100.0	100.0	0.0	0.0
			Total	32	0	30	0	1	0	0	0	0	0	30	100.0	97.0	98.4	0.0	0.0

Category	Incubation time	Type	PA	PA _{FP(alt)}	NA	NA _{FN(alt)}	PD	ND	ND _{FN(alt)}	PD _{FP(alt)}	TND	TNA	SE _{alt} %	SE _{ref} %	RT %	FP %	FNR
4	22 + 4 h	a Substantial raw ingredients	11	0	5	0	0	0	0	1	0	6	100.0	100.0	100.0	16.7	0.0
		b Processed (cooked) products	11	0	7	0	0	0	0	0	0	7	100.0	100.0	100.0	0.0	0.0
		c Refrigerated products	14	0	18	0	0	0	1	0	1	18	93.3	100.0	97.0	0.0	6.7
		Total	36	0	30	0	0	0	1	1	1	31	97.3	100.0	98.5	3.2	2.7
	22 + 22 h	a Substantial raw ingredients	11	0	6	0	0	0	0	0	0	6	100.0	100.0	100.0	0.0	0.0
		b Processed (cooked) products	11	0	7	0	0	0	0	0	0	7	100.0	100.0	100.0	0.0	0.0
		c Refrigerated products	15	0	18	0	0	0	0	0	0	18	100.0	100.0	100.0	0.0	0.0
		Total	37	0	31	0	0	0	0	0	0	31	100.0	100.0	100.0	0.0	0.0
5	22 + 4 h	a Swabs and sponges	11	0	24	0	0	0	0	0	0	24	100.0	100.0	100.0	0.0	0.0
		b Process water	10	0	13	0	0	0	0	0	0	13	100.0	100.0	100.0	0.0	0.0
		c Dusts	9	0	6	1	0	0	0	0	0	7	100.0	100.0	100.0	0.0	11.1
		Total	30	0	43	1	0	0	0	0	0	44	100.0	100.0	100.0	0.0	3.3
	22 + 22 h	a Swabs and sponges	11	0	24	0	0	0	0	0	0	24	100.0	100.0	100.0	0.0	0.0
		b Process water	10	0	13	0	0	0	0	0	0	13	100.0	100.0	100.0	0.0	0.0
		c Dusts	9	0	6	1	0	0	0	0	0	7	100.0	100.0	100.0	0.0	11.1
		Total	30	0	43	1	0	0	0	0	0	44	100.0	100.0	100.0	0.0	3.3
6	22 + 4 h	a Cut-ready-to-eat vegetables	12	0	12	0	0	0	0	0	0	12	100.0	100.0	100.0	0.0	0.0
		b Produce grown in contact with the ground	12	0	12	0	0	0	0	0	0	12	100.0	100.0	100.0	0.0	0.0
		c Cut ready-to-eat fruit	12	0	12	0	0	0	0	0	0	12	100.0	100.0	100.0	0.0	0.0
		Total	36	0	36	0	0	0	0	0	0	36	100.0	100.0	100.0	0.0	0.0
	22 + 22 h	a Cut-ready-to-eat vegetables	12	0	12	0	0	0	0	0	0	12	100.0	100.0	100.0	0.0	0.0
		b Produce grown in contact with the ground	12	0	12	0	0	0	0	0	0	12	100.0	100.0	100.0	0.0	0.0
		c Cut ready-to-eat fruit	12	0	12	0	0	0	0	0	0	12	100.0	100.0	100.0	0.0	0.0
		Total	36	0	36	0	0	0	0	0	0	36	100.0	100.0	100.0	0.0	0.0
Total short incubation time (4h)			194	0	209	2	1	0	1	1	1	212	99.5	99.5	99.5	0.5	1.5
Total long incubation time (22h)			195	0	210	1	2	0	0	0	0	211	100.0	99.0	99.5	0.0	0.5

3.1.7 *Discordant results*

Negative deviations are listed in Table 7 and positive deviations in Table 8.

> **Negative deviations**

Only one negative deviation was observed (samples n°4624: spinach) after 4h subculture in HFB. Negative PCR result was obtained while confirmation gave positive result after 72h storage at 5±3°C (typical colonies on ALOA and Palcam plates). Before storage, no typical colony was obtained on plates which may indicate a low level of contamination. The level of detection was probably not reached by the alternative method.

For samples in negative agreement with the reference method, two samples (after 4h subculture in HFB) and one sample (after 22h subculture in HFB) gave positive confirmation while negative PCR result was obtained: NA_{FN(alt)} samples. See table 8. It can be noted that positive confirmation result was obtained only after storage for sample n°5811 and only one colony was observed on ALOA for sample n°6844.

> **Positive deviations**

One (after 4 HFB incubation time) and two (after 22h HFB incubation time) positive deviations were observed. One sample was artificially contaminated and one naturally contaminated. See table 7.



Table 7 - Negative deviations

N°Sample	Product	ISO 11290-1/A1 method (L. spp result)	GDS Listeria spp method							Category	Type
			HFB 22h 30 ± 1°C with 4 or 22h subculture								
			PCR Result 4 h 30°C	PCR Result 22 h 30°C	Final confirmation	Final result 4 h	Final result 22 h	Agreement Ref/Alt 4 h	Agreement Ref/Alt 22 h		
4624	Spinach	<i>L. monocytogenes</i>	-	+	- (+ <i>L. monocytogenes</i> ref and at 72h)	-	+	ND _{FN(alt)}	PA	4	c

Table 8 - Positive deviations

N°Sample	Product	ISO 11290-1/A1 method (L. spp result)	GDS Listeria spp method							Category	Type
			HFB 22h 30 ± 1°C with 4 or 22h subculture								
			PCR Result 4 h 30°C	PCR Result 22 h 30°C	Final confirmation	Final result 4 h	Final result 22 h	Agreement Ref/Alt 4 h	Agreement Ref/Alt 22 h		
5068	Cooked beef meat	-	+	+	+ <i>L. innocua</i>	+	+	PD	PD	1	b
5811	Salmon puff	-	-	+	- (+ <i>L. welshimeri</i> at 72h)	-	+	NA _{FN(alt)}	PD	3	b



Table 9 – NA_{FN(alt)} samples

N°Sample	Product	ISO 11290-1/A1 method <i>Listeria spp</i> result	Assurance GDS <i>Listeria spp</i> method											Category	Type	
			Before storage					After storage 72h 5 ± 3°C								
			PCR Result 4H 30°C	PCR Result 22H 30°C	Confirmations		Agreement Ref/Alt		PCR Result		Confirmations		Agreement Ref/Alt			
		ALOA	Palcam	4h	22h	4h 30°C	22h 30°C	ALOA	Palcam	4h	22h					
581 1	Salmon puff	-	-	+	- (+ <i>L. welshimeri</i> at 72h)	-	NA _{FN(alt)}	PD	+	+	H- (<i>L. welshimeri</i>)	-	PD	PD	3	b
684 4	Dusts (Fish industry)	-	-	-	1H- (<i>L. seeligeri</i>)	st	NA _{FN(alt)}	NA _{FN(alt)}	-	+	st (+ x5)	st (+ x5)	NA _{FN(alt)}	PD	5	c

The analyses of discordant results according to the ISO 16140-2:2016 and ISO 16140-2/A1:2024 for a paired study is the following (See Table 10):

Table 10 - Interpretation of the sensitivity study results

Category	Type	N+	TND	PD	Paired					
					TND-PD	AL	TND+PD	AL		
1	Meat products 22 + 4h	a	Fresh meat (unprocessed)	12	0	0	0	3	0	3
		b	Cooked and cured meat products	10	0	1	-1		1	
		c	Fermented meat products	9	0	0	0		0	
		Total	31	0	1	-1	1			
	Meat products 22 + 22h	a	Fresh meat (unprocessed)	12	0	0	0	3	0	3
		b	Cooked and cured meat products	10	0	1	-1		1	
		c	Fermented meat products	9	0	0	0		0	
		Total	31	0	1	-1	1			
2	Milk and dairy products 22 + 4h	a	Thermisation/pasteurized products	9	0	0	0	3	0	3
		b	Fermented/acidified products	7	0	0	0		0	
		c	Raw milk-based products	14	0	0	0		0	
		Total	30	0	0	0	0			
	Milk and dairy products 22 + 22h	a	Thermisation/pasteurized products	9	0	0	0	3	0	3
		b	Fermented/acidified products	7	0	0	0		0	
		c	Raw milk-based products	14	0	0	0		0	
		Total	30	0	0	0	0			
3	Fish and seafood products 22 + 4h	a	Fish and shellfish	10	0	0	0	3	0	3
		b	Cooked fishery products	10	0	0	0		0	
		c	Smoked products	12	0	0	0		0	
		Total	32	0	0	0	0			
	Fish and seafood products 22 + 22h	a	Fish and shellfish	10	0	0	0	3	0	3
		b	Cooked fishery products	11	0	1	-1		1	
		c	Smoked products	12	0	0	0		0	
		Total	33	0	1	-1	1			
4	Ready-to-eat, ready-to-reheat or ready-to-cook products 22 + 4h	a	Substantial raw ingredients	11	0	0	0	3	0	3
		b	Processed (cooked) products	11	0	0	0		0	
		c	Refrigerated products	15	1	0	1		1	
		Total	37	1	0	1	1			
	Ready-to-eat, ready-to-reheat or ready-to-cook products 22 + 22h	a	Substantial raw ingredients	11	0	0	0	3	0	3
		b	Processed (cooked) products	11	0	0	0		0	
		c	Refrigerated products	15	0	0	0		0	
		Total	37	0	0	0	0			

Category		Type	N+	TND	PD	Paired			
						TND-PD	AL	TND+PD	AL
5	Production environmental samples 22 + 4h	a Swabs and sponges	11	0	0	0	3	0	3
		b Process water	10	0	0	0		0	
		c Dusts	9	0	0	0		0	
		Total	30	0	0	0		0	
	Production environmental samples 22 + 22h	a Swabs and sponges	11	0	0	0	3	0	3
		b Process water	10	0	0	0		0	
		c Dusts	9	0	0	0		0	
		Total	30	0	0	0		0	
6	Fresh produce and vegetables 22 + 4h	a Cut-ready-to-eat vegetables	12	0	0	0	3	0	3
		b Produce grown in contact with the ground	12	0	0	0		0	
		c Cut ready-to-eat fruit	12	0	0	0		0	
		Total	36	0	0	0		0	
	Fresh produce and vegetables 22 + 22h	a Cut-ready-to-eat vegetables	12	0	0	0	3	0	3
		b Produce grown in contact with the ground	12	0	0	0		0	
		c Cut ready-to-eat fruit	12	0	0	0		0	
		Total	36	0	0	0		0	
Total short incubation time (4h)			196	1	1	0	6	2	16
Total long incubation time (22h)			197	0	2	-2	6	2	16

The observed values for (TND – PD) and (TND + PD) for the individual categories and for all categories meet the acceptability limits (observed values ≤ AL).

3.1.8 Half Fraser enrichment storage at 5 ± 3 °C for 72 h

The storage of the subculture in HFB broth was done at 5°C ± 3°C for 72 h.

All positive and discordant samples were tested again after enrichment broth storage. For this study, 247 enriched samples were tested again after storage of the enriched broth for 72 h at 5 ± 3°C. Changes were observed for six samples. The following changes were observed (See Table 11).

Table 11 - Observed changes in results before and after storage of the enrichment broth

Sample n°	Before storage		After storage		Category	Type
	22 + 4 h	22 + 22 h	22 + 4 h	22 + 22 h		
4624	ND _{FN(alt)}	PA	PA	PA	4	c
4766	PA	PA	ND _{FN(alt)}	PA	2	a
4771	NA	NA	PD	PD	2	a
5811	NA _{FN(alt)}	PD	PD	PD	3	b
6834	PA	PA	ND _{FN(alt)}	PA	5	a
6844	NA _{FN(alt)}	NA _{FN(alt)}	NA _{FN(alt)}	PD	5	c

The analyses of discordant become (See Table 12).

Table 12 - Interpretation of the sensitivity study results after storage of the enrichment broth at 5°C ± 3°C

Category	Type	N+	TND	PD	TND-PD	Paired			
						AL	TND+PD	AL	
1	Meat products 22 + 4h	a Fresh meat (unprocessed)	12	0	0	0	3	0	3
		b Cooked and cured meat products	10	0	1	-1		1	
		c Fermented meat products	9	0	0	0		0	
		Total	31	0	1	-1		1	
	Meat products 22 + 22h	a Fresh meat (unprocessed)	12	0	0	0	3	0	3
		b Cooked and cured meat products	10	0	1	-1		1	
		c Fermented meat products	9	0	0	0		0	
		Total	31	0	1	-1		1	
2	Milk and dairy products 22 + 4h	a Thermisation/pasteurized products	10	1	1	0	3	2	3
		b Fermented/acidified products	7	0	0	0		0	
		c Raw milk-based products	14	0	0	0		0	
		Total	31	1	1	0		2	
	Milk and dairy products 22 + 22h	a Thermisation/pasteurized products	10	0	1	-1	3	1	3
		b Fermented/acidified products	7	0	0	0		0	
		c Raw milk-based products	14	0	0	0		0	
		Total	31	0	1	-1		1	

Category		Type	N+	TND	PD	Paired			
						TND-PD	AL	TND+PD	AL
3	Fish and seafood products 22 + 4h	a Fish and shellfish	10	0	0	0	3	0	3
		b Cooked fishery products	11	0	1	-1		1	
		c Smoked products	12	0	0	0		0	
		Total	33	0	1	-1		1	
	Fish and seafood products 22 + 22h	a Fish and shellfish	10	0	0	0	3	0	3
		b Cooked fishery products	11	0	1	-1		1	
c Smoked products		12	0	0	0	0			
Total		33	0	1	-1	1			
4	Ready-to-eat, ready-to-reheat or ready-to-cook products 22 + 4h	a Substantial raw ingredients	11	0	0	0	3	0	3
		b Processed (cooked) products	11	0	0	0		0	
		c Refrigerated products	15	0	0	0		0	
		Total	37	0	0	0		0	
	Ready-to-eat, ready-to-reheat or ready-to-cook products 22 + 22h	a Substantial raw ingredients	11	0	0	0	3	0	3
		b Processed (cooked) products	11	0	0	0		0	
c Refrigerated products		15	0	0	0	0			
Total		37	0	0	0	0			
5	Production environmental samples 22 + 4h	a Swabs and sponges	11	1	0	1	3	1	3
		b Process water	10	0	0	0		0	
		c Dusts	9	0	0	0		0	
		Total	30	1	0	1		1	
	Production environmental samples 22 + 22h	a Swabs and sponges	11	0	0	0	3	0	3
		b Process water	10	0	0	0		0	
c Dusts		10	0	1	-1	1			
Total		31	0	1	-1	1			
6	Fresh produce and vegetables 22 + 4h	a Cut-ready-to-eat vegetables	12	0	0	0	3	0	3
		b Produce grown in contact with the ground	12	0	0	0		0	
		c Cut ready-to-eat fruit	12	0	0	0		0	
		Total	36	0	0	0		0	
	Fresh produce and vegetables 22 + 22h	a Cut-ready-to-eat vegetables	12	0	0	0	3	0	3
		b Produce grown in contact with the ground	12	0	0	0		0	
c Cut ready-to-eat fruit		12	0	0	0	0			
Total		36	0	0	0	0			
Total short incubation time (22 + 4h)			198	2	3	-1	6	5	16
Total long incubation time (22 + 22h)			199	0	4	-4	6	4	16

The observed values for TND - PD and TND + PD for the individual categories and for all categories meet the acceptability limits (observed values ≤ AL).

3.1.9 Confirmation

It was impossible to confirm the presence of *Listeria* spp in the enrichment broth after subculture 4 h in HFB for 1 samples (PD_{FP(alt)}): n° 4749 (roll of puff pastry). Positive PCR results were obtained while no typical colonies were recovered.

3.2 Relative level of detection

The relative level of detection is the level of detection at $P = 0.50$ (LOD_{50}) of the alternative (proprietary) method divided by the level of detection at $P = 0.50$ (LOD_{50}) of the reference method.

The RLOD is defined as the ratio of the alternative and reference methods:

$$RLOD = \frac{LOD_{Alt.}}{LOD_{Ref.}}$$

3.2.1 Categories, sample types and strains

Six (matrix/strain) pairs were analysed by the reference method and by the alternative method (See Table 13):

Table 13 - List of selected types and strains per category, as tested within the relative level of detection study

Category	Type	Strain	Reference number	Strain origin	Seeding procedure
Meat products	Sausage	<i>L. monocytogenes</i>	Ad669	Meat product	48 h at 5 ± 3°C
Milk and dairy products	Goat cheese	<i>L. innocua</i>	Ad636	Cheese	
Fish and seafood products	Smoked salmon	<i>L. welshimeri</i>	Ad1669	Smoked salmon	
Ready-to-eat, ready-to-reheat and ready-to-cook products	Potatoes	<i>L. monocytogenes</i>	Ad279	Vegetables based, ready-to-eat food	
Environmental samples	Process water	<i>L. monocytogenes</i>	Ad631	Dairy environment	
Fresh produce and vegetables	Pre-cut bagged spinach	<i>L. seeligeri</i>	QL 031011-5	Frozen vegetables	

3.2.2 Test sample preparations

Three levels of artificial contamination were prepared for each type:

- Negative control level: one non-inoculated in order to get 5 test portions,

- Low level: one inoculated between 0.2 and 2.0 CFU/sample in order to get 20 test portions providing fractional recovery,
- Higher level: one inoculated between 2.0 and 5.0 CFU/sample in order to get 5 test portions contaminated at a higher level.

A bulk lot of the matrix was inoculated at each level, homogenized and stored as described in Table 13.

3.2.3 RLOD study results

The tabulated raw data on the RLOD are given in **Appendix 6**.

The RLOD calculations were performed using the Excel spreadsheet available at <http://standards.iso.org/iso/16140> - RLOD version 4 (2024-01-10). The RLOD are given in Table 14.

Table 14 – Presentation of RLOD before and after confirmation of the alternative method results

Category	Matrix / strain	AL	RLOD [95% confidence limit]	
			22 + 4 h incubation	22 + 22h incubation
1	Sausage / <i>L. monocytogenes</i> Ad669	1.5	1.0 [0.4; 2.4]	1.0 [0.4; 2.4]
2	Goat cheese / <i>L. innocua</i> Ad636		1.0 [0.5; 2.1]	1.0 [0.5; 2.1]
3	Smoked salmon / <i>L. welshimeri</i> Ad1669		1.0 [0.4; 2.5]	1.0 [0.4; 2.5]
4	Potatoes / <i>L. monocytogenes</i> Ad279		1.0 [0.5; 2.0]	1.0 [0.5; 2.0]
5	Process water / <i>L. monocytogenes</i> Ad631		1.0 [0.4; 2.6]	1.0 [0.4; 2.6]
6	Pre-cut bagged spinach / <i>L. seeligeri</i> QL 031011-2		1.0 [0.4; 2.5]	1.0 [0.4; 2.5]
Combined			1.0 [0.7;1.4]	1.0 [0.7;1.4]

The LOD₅₀ calculations were done using the Excel spreadsheet available at <http://standards.iso.org/iso/16140> POD-LOD calculation program - version 12, 2024-03-05. The tests are given in Table 15.

Table 15 - LOD₅₀ results

Category	(Strain / matrix) pair	Level of detection at 50% (CFU / test portion)			Level of detection at 95% (CFU / test portion)		
		Reference method	Alternative method		Reference method	Alternative method	
			4h	22h		4h	22h
1	Sausage / <i>L. monocytogenes</i> Ad669	0.6 [0.3 ; 1.1]	0.6 [0.3 ; 1.1]	0.6 [0.3 ; 1.1]	2.7 [1.5 ; 4.9]	2.7 [1.5 ; 4.9]	2.7 [1.5 ; 4.9]
2	Goat cheese / <i>L. innocua</i> Ad636	0.6 [0.3 ; 1.0]	0.6 [0.3 ; 1.0]	0.6 [0.3 ; 1.0]	2.5 [1.5 ; 4.4]	2.5 [1.5 ; 4.4]	2.5 [1.5 ; 4.4]
3	Smoked salmon / <i>L. welshimeri</i> Ad1669	0.5 [0.3 ; 1.0]	0.5 [0.3 ; 1.0]	0.5 [0.3 ; 1.0]	2.3 [1.2 ; 4.1]	2.3 [1.2 ; 4.1]	2.3 [1.2 ; 4.1]
4	Potatoes / <i>L. monocytogenes</i> Ad279	0.8 [0.5 ; 1.4]	0.8 [0.5 ; 1.4]	0.8 [0.5 ; 1.4]	3.6 [2.1 ; 6.2]	3.6 [2.1 ; 6.2]	3.6 [2.1 ; 6.2]
5	Process water / <i>L. monocytogenes</i> Ad631	0.6 [0.3 ; 1.2]	0.6 [0.3 ; 1.2]	0.6 [0.3 ; 1.2]	2.7 [1.4 ; 5.0]	2.7 [1.4 ; 5.0]	2.7 [1.4 ; 5.0]
6	Pre-cut bagged spinach / <i>L. seeligeri</i> QL 031011-2	0.6 [0.3 ; 1.3]	0.6 [0.3 ; 1.3]	0.6 [0.3 ; 1.3]	2.7 [1.3 ; 5.4]	2.7 [1.3 ; 5.4]	2.7 [1.3 ; 5.4]
Combined results		0.7 [0.5;0.8]	0.7 [0.5;0.8]	0.7 [0.5;0.8]	2.8 [2.2 ; 3.5]	2.8 [2.2 ; 3.5]	2.8 [2.2 ; 3.5]

3.2.4 Conclusion

The RLOD values (using the confirmed alternative method results) meet the acceptability limit for all categories tested.

3.3 Inclusivity / exclusivity

The inclusivity is the ability of the alternative method to detect the target analyte from a wide range of strains. The exclusivity is the lack of interference from a relevant range of non-target strains of the alternative method.

3.3.1 Protocols

> Inclusivity

Fifty (50) *Listeria* species strains (20 *Listeria monocytogenes* and 30 *Listeria* species) were freshly cultured in BHI medium at 37 ± 1°C. The *Listeria* species include the following: *Listeria grayi*, *innocua*, *ivanovii*, *seeligeri* and *welshimeri* as shown in Appendix 7. Dilutions were made in order to inoculate 10 CFU in 225 ml HFB. The alternative method protocol was then performed after 22h of incubation followed by 4h subculture.

Due to the observed data on 32 strains, including 2 *Listeria monocytogenes* strains, two other protocols were tested. The 32 strains were also analyzed following the ISO reference method:

- Enrichment in HFB (225 mL) supplemented with sterile process water (25 mL) to mimic the analysis of environmental samples, followed by 4 h and 22 h sub-sample in HFB prior to the IMS and PCR steps.
- Enrichment in HFB (225 mL) supplemented with UHT milk (25 mL) to mimic the analysis of food samples, followed by 4 h and 22 h sub-culture in HFB prior to the IMS and PCR steps.

In 2024, It has been required by the MicroVal technical committee to incorporate new *Listeria* strains into the inclusivity / exclusivity list for *Listeria* spp and *Listeria monocytogenes* validation study. A ratio of 80% of sensu stricto and 20% of sensu lato must be considered.

Therefore, in order to complete the list of strains tested during the initial validation, the strains described in Table 16 were added for this renewal.

Table 16 - List of added strains in inclusivity during the renewal in 2025

Strain	Species	Classification (Carlin et al. 2021)	Classification (Bouznada et al., 2024)	Reference	Origin
<i>Listeria</i>	<i>farberii</i>	Sensu stricto	<i>Listeria</i>	LMG 31917	Soil
<i>Listeria</i>	<i>immobilis</i>	Sensu stricto	<i>Listeria</i>	LMG 31920	Soil
<i>Listeria</i>	<i>marthii</i>	Sensu stricto	<i>Listeria</i>	DSM 23813	Soil
<i>Listeria</i>	<i>cornellensis</i>	Sensu lato	<i>Paenilisteria</i>	DSM26689	water
<i>Listeria</i>	<i>fleischmanii</i> subsp <i>fleischmanii</i>	Sensu lato	<i>Mesolisteria</i>	DSM24998	Hard cheese
<i>Listeria</i>	<i>grandensis</i>	Sensu lato	<i>Paenilisteria</i>	DSM26688	water
<i>Listeria</i>	<i>riparia</i>	Sensu lato	<i>Paenilisteria</i>	DSM26685	Running water
<i>Listeria</i>	<i>rocourtiae</i>	Sensu lato	<i>Listeria / Paenilisteria</i>	DSM 22097	lettuce
<i>Listeria</i>	<i>grayi</i>	Sensu lato	<i>Murraya</i>	Ad3288	Smoked bacon
<i>Listeria</i>	<i>grayi</i>	Sensu lato	<i>Murraya</i>	Ad3205	Chicken nuggets
<i>Listeria</i>	<i>grayi</i>	Sensu lato	<i>Murraya</i>	Ad2415	Rillette
<i>Listeria</i>	<i>grayi</i>	Sensu lato	<i>Murraya</i>	Ad1295	Spinach

> Exclusivity

Thirty-two (32) strains were freshly cultured in BHI medium at 37 ± 1°C. Dilutions were made in order to inoculate about 10⁵ CFU/ ml BHI. The alternative method was then performed.

3.3.2 Results

Raw data are given in **Appendix 7**.

> Inclusivity – Initial validation study

A total of 50 strains were tested for **inclusivity**. Forty-nine (49) of the target strains were detected by the alternative method. For 12 strains, the addition of a matrix in the first enrichment step decreases the selectivity of the primary enrichment broth and improves the recovery of the strains providing a positive PCR result.

For both the alternative method and reference method, some *Listeria* species isolates were not detected:

- GDS *Listeria* species method:
 - when using 4 h subculture
 - > 4 strains with the addition of process water in the primary enrichment broth:
 - *Listeria grayi* ATCC19120
 - *Listeria grayi* CIP 76124
 - *Listeria ivanovii* Ad1290
 - *Listeria seeligeri* CIP100100
 - > 2 strains with the adding of UHT milk in the primary enrichment broth:
 - *Listeria grayi* CIP 76124
 - *Listeria seeligeri* CIP100100
 - when using 22-hour sub-culture
 - > 2 strains with the addition of process water in the primary enrichment broth:
 - *Listeria grayi* ATCC19120
 - *Listeria grayi* CIP 76124
 - > 1 strain with the addition of UHT milk in the primary enrichment broth:
 - *Listeria grayi* CIP 76124
- ISO 11290-1 method
 - 3 strains, even when adding process water and UHT milk in the primary enrichment broth:
 - *Listeria grayi* ATCC19120
 - *Listeria grayi* CIP 76124
 - *Listeria seeligeri* CIP100100

To summarize, only the *Listeria ivanovii* Ad1290 was detected by the reference method but not by the alternative method.

> Inclusivity – Renewal study

Three *sensu stricto* *Listeria* strains were tested and gave positive results with the alternative method and the reference method.

Nine *sensu lato* *Listeria* strains were tested:

- 6 strains gave positive PCR result. Only two of them gave typical colonies on O&A and Palcam plates (positive for the reference method).
- 3 strains gave negative PCR result:
 - o *Listeria fleischmanii* DSM24998
 - o *Listeria cornellensis* DSM26689
 - o *Listeria grandensis* DSM26688
 - o Among those three strains, only one is detected by the reference method (*Listeria fleischmanii* DSM24998).

To summarize, among the 9 *sensu lato* evaluated, 6 are positive for the alternative method, while only 3 are detected by the reference method.

> Exclusivity

A total of 32 strains were tested for **exclusivity**. All 32 strains showed the expected negative result. 0 strain showed a positive result.

3.3.3 Conclusion

The alternative Assurance GDS *Listeria* species Tq detection method is selective and specific.

3.4 Conclusion Method Comparison Study

Overall, the conclusions for the Method Comparison Study are:

The observed values for TND-PD and TND+PD for the individual categories and for all categories meet the acceptability limits (observed values \leq AL). The RLOD values (using the confirmed alternative method results) meet the acceptability limit, which is 1.5 for paired studies for all categories tested. The alternative Assurance GDS Listeria species Tq detection method is selective and specific.

4 INTER-LABORATORY STUDY

The inter-laboratory study is a study performed by multiple laboratories testing identical samples at the same time, the results of which are used to estimate alternative-method performance parameters.

During the inter-laboratory study, 22 + 4 h incubation time was tested.

4.1 Study organisation

> *Collaborators number*

Samples were sent to 7 laboratories gathering 14 collaborators.

> *Matrix and strain used*

Cheese samples was inoculated with *Listeria monocytogenes* 153 strain.

> *Samples*

Samples were inoculated and sent on Monday 13th May 2013, as described below:

- 24 codified samples for *Listeria monocytogenes* research by GDS *Listeria monocytogenes* Tq method and by the reference method (NF EN ISO 11290-1/A1),
- 1 sample for aerobic mesophilic flora enumeration by ISO 4833 method,

- 1 water flask labelled "Temperature Control" with a temperature probe.

The analyses were started on Wednesday 15th May 2013.

> *Inoculation*

The targeted inoculation levels were the following:

- 0 CFU/25 ml,
- 1 – 10 CFU/25 ml,
- 5 – 50 CFU/25 ml.

> *Labelling and shipping*

Blind coded samples were placed in isothermal boxes, which contained cooling blocks, and express-shipped to the different laboratories.

A temperature control flask containing a sensor was added to the package in order to register the temperature profile during the transport, the package delivery and storage until analyses.

Samples were shipped in 24 h to 48 h to the involved laboratories. The temperature conditions had to stay lower or equal to 8°C during transport, and between 0°C – 8°C in the labs.

> *Analyses*

Collaborative study laboratories and the expert laboratory carried out the analyses at Day 2 with the alternative and reference methods.

4.2 Experimental parameters controls

4.2.1 Detection of *Listeria monocytogenes* in the matrix before inoculation

In order to detect the presence of *Listeria monocytogenes*, the reference method was performed on five portions (25 g) before the inoculation. All the results were negative.

4.2.2 Strain stability during transport

Sample stability was checked by inoculating the matrix at 100 CFU/g and 5 CFU/g. Enumerations were performed for the high contamination level and detection analyses were performed for the low contamination level. *Triplicates* were analysed. The mesophilic aerobic flora was also enumerated; the results are given in Table 17.

Table 17 – *Listeria monocytogenes* Sample stability

Day	Reference method (detection)			CFU/g (O&A)			Mesophilic aerobic flora (CFU/g)
	Sample 1	Sample 2	Sample 3	Sample 1	Sample 2	Sample 3	
Day 0	+	+	+	130	130	130	3.3 10 ⁶
Day 1	+	+	+	100	150	170	4.0 10 ⁶
Day 2	+	+	+	160	150	120	2.9 10 ⁶

No evolution was observed during storage at 5°C ± 3°C.

4.2.3 Contamination levels

The contamination levels and the sample codification were the following (see Table 18).

Table 18 - Contamination levels

Level	Samples	Theoretical target level (CFU/test portion)	True level (CFU/test portion)	Low limit (CFU/test portion)	High limit (CFU/test portion)
Level 0	3 – 5 – 9 – 13 – 14 – 18 – 22 – 23	0	/	/	/
Low level	2 – 7 – 8 – 11 – 15 – 17 – 21 – 24	2	1.9	1.5	2.3
High level	1 – 4 – 6 – 10 – 12 – 16 – 19 – 20	25	25.0	22.1	28.4

4.2.4 Logistic conditions

The temperatures measured at reception by the collaborators, the temperatures registered by the thermo-probe, and the receipt dates are given in Table 19.

Table 19 - Sample temperatures at receipt

Collaborators	Temperature measured by the sensor (°C)	Temperature measured at receipt (°C)	Receipt date and time	
A	<i>Lost</i>	3.9	14/05/2013	14h15
B	2.0	4.8	14/05/2013	14h15
C	1.0	2.1	14/05/2013	15h00
D	3.5	4.4	14/05/2013	15h00
E	2.0	3.2	14/05/2013	13h00
F	3.0	3.0 – 4.0	14/05/2013	09h30
G	<i>Lost</i>	3.0 – 4.0	14/05/2013	10h00
H	1.0	4.3	14/05/2013	10h30
I	2.5	5.3	14/05/2013	10h30
J	0.5	2.5	14/05/2013	11h00
K	<i>Lost</i>	3.0	14/05/2013	11h00
L	1.0	2.5	14/05/2013	11h00
M	<i>Out of order</i>	4.0	14/05/2013	11h00
N	2.0	5.0	14/05/2013	11h00

No problem was encountered during the transport or at receipt for the 14 collaborators. All the samples were delivered on time and in appropriate conditions. For four collaborators, probe was not available but temperatures during receipt were all correct.

4.3 Calculation and summary of data

The raw data are given in **Appendix 8**.

4.3.1 MicroVal Expert laboratory results

The results obtained by the expert laboratory are given in Table 20.

Table 20 – Results obtained by the expert Lab.

Level	Reference method	Alternative method
L0	0/8	0/8
L1	7/8	7/8
L2	8/8	8/8

4.3.2 Results observed by the collaborative laboratories

> *Mesophilic aerobic flora enumeration*

Depending on the Lab results, the enumeration levels varied from $1.7 \cdot 10^6$ to $6.0 \cdot 10^6$ CFU/g.

> *Listeria spp. detection*

7 Labs participated in the study, involving at least 14 collaborators. The results obtained by the individual collaborators in the inter-laboratory are summarized in Table 21 (reference method) and Table 22 (alternative method).

Table 21 - Positive results by the reference method (ALL the collaborators)

Collaborator	Contamination level		
	L0	L1	L2
A	0/8	8/8	8/8
B	0/8	7/8	8/8
C	0/8	8/8	8/8
D	0/8	6/8	8/8
E	2/8	8/8	8/8
F	0/8	8/8	8/8
G	0/8	8/8	8/8
H	0/8	7/8	8/8
I	0/8	7/8	8/8
J	0/8	8/8	8/8
K	0/8	8/8	8/8
L	0/8	6/8	8/8
M	0/8	4/8	8/8
N	0/8	7/8	8/8
TOTAL	P₀ = 2	P₁ =100	P₂ = 112

Table 22 - Positive results (before and after confirmation) by the alternative method (ALL the collaborators)

Collaborators	Contamination level								
	L0			L1			L2		
	PCR result	Confirmation result	Final result	PCR result	Confirmation result	Final result	PCR result	Confirmation result	Final result
A	0	0	0	8	8	8	8	8	8
B	0	0	0	7	7	7	8	8	8
C	0	0	0	8	8	8	8	8	8
D	0	0	0	6	6	6	8	8	8
E	0	0	0	7	8	7	8	8	8
F	0	0	0	8	8	8	8	8	8
G	0	0	0	8	8	8	8	8	8
H	0	0	0	7	7	7	8	8	8
I	0	0	0	7	7	7	8	8	8
J	0	0	0	8	8	8	8	8	8
K	0	0	0	8	8	8	8	8	8
L	0	0	0	6	6	6	8	8	8
M	0	0	0	5	4	4	8	8	8
N	0	0	0	7	8	7	8	8	8
Total	P₀ = 0	C₀ = 0	CP₀ = 0	P₁ = 100	C₁ = 101	CP₁ = 99	P₂ = 112	C₂ = 112	CP₂ = 112

One collaborator (E) obtained 2 positive results at Level L0 with the reference method. According to 2023-268 (TC) MVTC interpretation of ISO 16140-2 -6 v2.6, all data from collaborators that found (false) positive results with the blank samples either by the reference or alternative method should not be taken into account. Therefore, the results from the collaborator E were not kept for interpretation.

4.3.3 Results of the collaborators retained for interpretation

The results obtained with the 13 collaborators kept for interpretation are presented in Table 23 (reference method) and Table 24 (alternative method).

Table 23 - Positive results by the reference method (Without Lab E)

Collaborator	Contamination level		
	L0	L1	L2
A	0/8	8/8	8/8
B	0/8	7/8	8/8
C	0/8	8/8	8/8
D	0/8	6/8	8/8
F	0/8	8/8	8/8
G	0/8	8/8	8/8
H	0/8	7/8	8/8
I	0/8	7/8	8/8
J	0/8	8/8	8/8
K	0/8	8/8	8/8
L	0/8	6/8	8/8
M	0/8	4/8	8/8
N	0/8	7/8	8/8
TOTAL	P₀ = 0	P₁ = 92	P₂ = 104

**Table 24 - Positive results (before and after confirmation)
 by the alternative methods (Without Lab E)**

Collaborators	Contamination level								
	L0			L1			L2		
	PCR result	Confirmation result	Final result	PCR result	Confirmation result	Final result	PCR result	Confirmation result	Final result
A	0	0	0	8	8	8	8	8	8
B	0	0	0	7	7	7	8	8	8
C	0	0	0	8	8	8	8	8	8
D	0	0	0	6	6	6	8	8	8
F	0	0	0	8	8	8	8	8	8
G	0	0	0	8	8	8	8	8	8
H	0	0	0	7	7	7	8	8	8
I	0	0	0	7	7	7	8	8	8
J	0	0	0	8	8	8	8	8	8
K	0	0	0	8	8	8	8	8	8
L	0	0	0	6	6	6	8	8	8
M	0	0	0	5	4	4	8	8	8
N	0	0	0	7	8	7	8	8	8
Total	P₀ = 0	C₀ = 0	CP₀ = 0	P₁ = 93	C₁ = 93	CP₁ = 92	P₂ = 104	C₂ = 104	CP₂ = 104

4.3.4 Calculation of the specificity percentage (SP)

The percentage specificities (SP) of the reference method and of the alternative method, using the data after confirmation, based on the results of level L0, are the following (See Table 25).

Table 25 - Percentage specificity

Specificity for the reference method	$SP_{ref} = \left(1 - \left(\frac{P_0}{N_-} \right) \right) \times 100 \% =$	100 %
Specificity for the alternative method	$SP_{alt} = \left(1 - \left(\frac{CP_0}{N_-} \right) \right) \times 100 \% =$	100 %

N: number of all L0 tests

P_0 = total number of false-positive results obtained with the blank samples before confirmation

CP_0 = total number of false-positive results obtained with the blank samples

4.3.5 Calculation of sensitivity (SE_{alt}), sensitivity for the reference method (SE_{ref}), relative trueness (RT), false positive ratio for the alternative method (FPR) and false negative ratio for the alternative method (FNR)

Partial positive results were obtained for the low level (88.5% (L1) for alternative and reference method) but above the range described in the ISO 16140-2 for fractional positive results (25-75%). The interpretation of the data was performed for Level 1 only.

Despite this high percentage of positives, the distribution of results across collaborators indicates that the alternative method was still appropriately challenged. Specifically, 7 out of 13 collaborators obtained at least one negative result: 4 collaborators have obtained 7 positives, 2 have obtained 6 positives and 1 have obtained 4 positives out of 8 contaminated samples. This variability is typical in low-level contamination studies and confirms that the method was tested under limiting conditions.

A summary of the results of the collaborators retained for interpretation and obtained with the reference and the alternative methods for Level 1 is provided in Table 26.

Table 26 - Summary of results for all collaborators obtained with the reference and alternative methods for Level 1

Level	Response	Reference method positive (R+)	Reference method negative (R-)
L1	Alternative method positive (A+)	Positive agreement (A+/R+) PA = 91	Positive deviation (R-/A+) PD = 1
	Alternative method negative (A-)	Total Negative deviation (A-/R+) TND = 1 (1 ND_{FN(alt)})	Total Negative agreement (A-/R-) TNA = 11 (1 PD_{FP(alt)}, 0 NA_{FN(alt)})

Based on the data summarized in Table 26, the values of sensitivity of the alternative and reference methods, as well as the relative trueness and false positive ratio for the alternative method taking account the confirmations, are the following (See Table 27).

Table 27 - Sensitivity, relative trueness, false positive ratio and false negative ratio percentages

		Level L1
Sensitivity for the alternative method	$SE_{alt} = \frac{(PA + PD)}{(PA + TND + PD)} \times 100 \%$	98.9 %
Sensitivity for the reference method	$SE_{ref} = \frac{(PA + TND)}{(PA + TND + PD)} \times 100 \%$	98.9 %
Relative trueness	$RT = \frac{(PA + TNA)}{N} \times 100 \%$	98.1 %
False positive ratio for the alternative method (paired evaluation)	$FPR = \frac{PA_{FP(alt)}}{TNA} \times 100 \%$	9.1 %
False negative ratio for the alternative method (paired evaluation)	$FNR = \frac{ND_{FN(alt)}}{PA + TND + PD} \times 100 \%$	1.1 %

Paired study with $TNA = NA + PD_{FP(alt)}$ $TND = ND_{FN(alt)}$

4.3.6 Interpretation of trueness data

Negative deviation and positive deviations are listed in Table 28 for Level 1.

Table 28 - Negative and positive deviations for Level 1

Level	Collaborator	Sample	Reference method result ISO 11290-1	Alternative method: GDS <i>Listeria</i> spp.				Agreement
				PCR GDS <i>Listeria</i> spp	OCLA	Palcam	Final result	
L1	N8	8	-	+	+	+	+	PD
L1		24	+	-	+	+	-	ND _{FN(alt)}

For a **paired study design**, the difference between (TND – PD) and the addition (TND + PD) are calculated for the level(s) where fractional recovery is obtained (so L₁ and possibly L₂). The observed value found for (TND – PD) and (TND + PD) shall not be higher than the AL.

For 13 collaborators, the limits are the following:

	Calculated values	AL	Conclusion
	L1		L1
TND - PD	0	4	TND – PD < AL
TND + PD	2	5	TND + PD < AL

The ISO 16140-2:2016 & ISO 16140-2/A1:2024 requirements are fulfilled as (TND - PD) and (TND + PD) meet the AL for Level L1.

4.3.7 Evaluation of the LOD_{50%} and RLOD between laboratories

The LOD_{50%}, was calculated using the EN ISO 16140-2 Excel spreadsheet available at https://standards.iso.org/iso/16140/-2/ed-1/en/amd/1/PODLOD-interlab_ver2.xlsm
 The RLOD is defined as the ratio of the LODs of the alternative method and the reference method: **RLOD = LOD_{alt}/LOD_{ref}**.

The results are given in Table 29.

Table 29 - LOD_{50%} and RLOD

Method	LOD 50%	RLOD
Reference	0.6 [0.5;0.8]	1.0
Alternative	0.6 [0.5;0.8]	

4.4 Conclusion Inter-laboratory study

The observed values for TND-PD and TND+PD is/are lower than the acceptability limits. The data and interpretations comply with the ISO 16140-2:2016, ISO 16140-2/A1:2024 requirements.

The Assurance GDS *Listeria* spp. Tq is considered equivalent to the ISO standard.

5 GENERAL CONCLUSION

The method comparison study conclusions are:

Overall, the conclusions for the Method Comparison Study are:

The observed values for TND-PD and TND+PD for the individual categories and for all categories meet the acceptability limits (observed values \leq AL).

The RLOD values (using the confirmed alternative method results) meet the acceptability limit, which is 1.5 for paired studies for all categories tested.

The alternative Assurance GDS *Listeria* species Tq detection method is selective and specific.

The inter-laboratory study conclusions are:

The observed values for TND-PD and TND+PD are lower than the acceptability limits.

The data and interpretations comply with the ISO 16140-2:2016, ISO 16140-2/A1:2024 requirements.

The Assurance GDS *Listeria* spp. Tq is considered equivalent to the ISO standard.

Quimper, 25 February 2026

Astrid CARIOU

Manager
Method performance in food microbiology

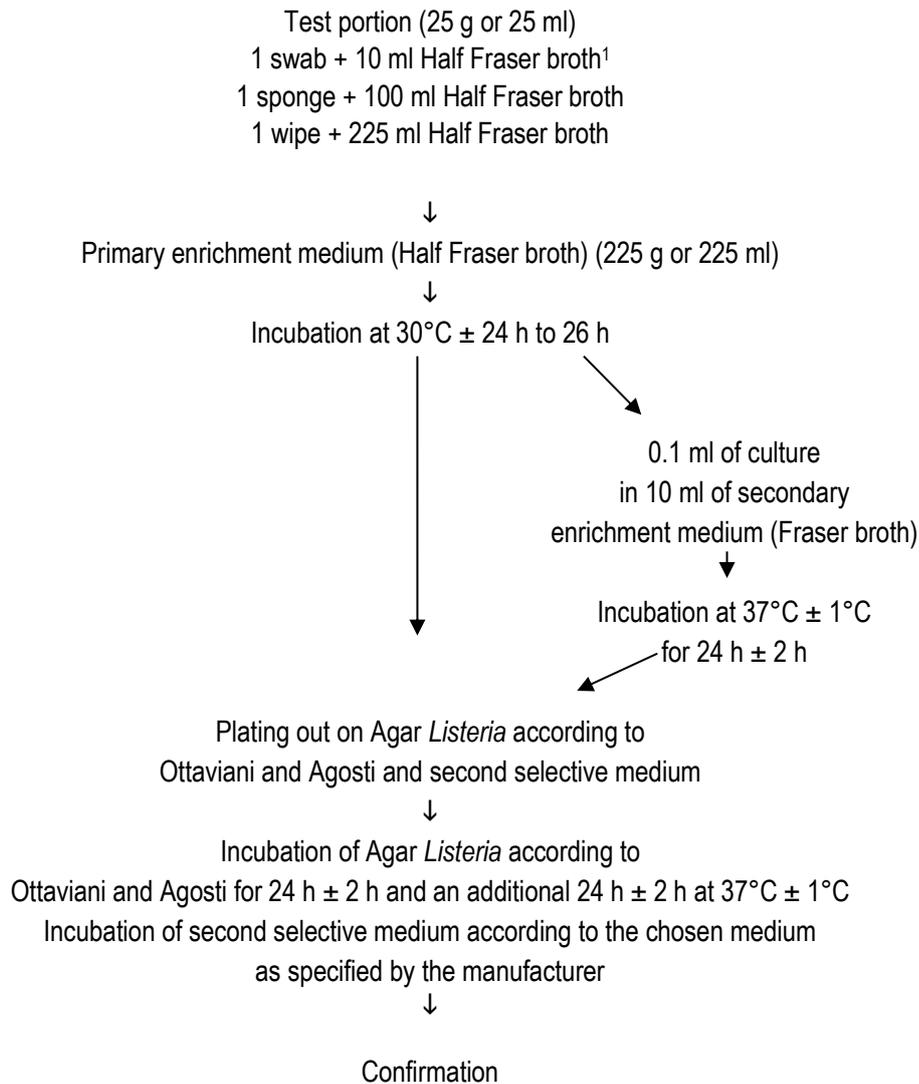
I hereby attest to the validation of the verification of the conformity of the report (opinion and interpretation).

6 REFERENCES

- ISO 4833-1:2013; Microbiology of the food chain -- Horizontal method for the enumeration of microorganisms -- Part 1: Colony count at 30 degrees C by the pour plate technique
- ISO 6887 (all parts); Microbiology of the food chain -- Preparation of test samples, initial suspension and decimal dilutions for microbiological examination – All parts.
- ISO 7218:2024; Microbiology of food and animal feeding stuffs -- General requirements and guidance for microbiological examinations.
- ISO 16140-2:2016; Microbiology of the food chain -- Method validation -- Part 2: Protocol for the validation of alternative (proprietary) methods against a reference method.
- 2016-028 (GC) Proposed MicroVal Technical committee interpretation of ISO 16140-2 and ISO
- 2017-063 (TC) The MicroVal Process

Appendix 1 - Flow diagram of the reference method: ISO 11290-1:2017 - Microbiology of the food chain - Horizontal method for the detection and enumeration of *Listeria monocytogenes* and other *Listeria* spp. -

Part 1: detection method



Target	Gram	Catalase	Beta hemolysis	CAMP test	Carbohydrates
<i>Listeria</i> spp	x	x			
<i>Listeria monocytogenes</i>	x	Optional	x	Optional	x

¹ For sampling after cleaning process pre-moisten
 - 1 swab + 1 ml broth universal neutralizing (+ 9 ml Half-Fraser)
 - 1 sponge + 10 ml broth universal neutralizing (+ 90 ml Half-Fraser)
 - 1 wipe + BPW + 10 % neutralizing agent (+ 225 ml Half-Fraser)

**Appendix 2 - Flow diagram of the alternative method:
Assurance GDS *Listeria* spp. Tq**

Food Types:

25 g + 225 mL Half Fraser Broth

Environmental samples:

1 swab + 10 mL Half Fraser Broth
or 1 sponge + 90 mL Half Fraser Broth
or 10 g or 10 mL + 90 mL Half Fraser Broth



Incubation 24 h ± 2 h at 30°C



Concentrate with Pick Pen device. Transfer 0.5 mL Half Fraser Broth
And incubate at 30°C for 4 and 22 hours.



Concentrate with Pick Pen device, lyse and analyze via PCR.



Or

Store IMS Half Fraser Broth at 5 °C ± 3 °C up to 72 h.
Concentrate with PickPen device, **lyse and analyze via PCR.**



CONFIRM PER ISO 11290-1 (ANNEX A):

Streaking onto ALOA (OAA)+ secondary agar (PALCAM) plates



Incubation 48 h ± 2 h at 37°C
(read plates at both 24 and 48 hours)



Confirmatory test on one typical colony, and four other colonies (if the first one is negative)
(typical colony: blue to blue-green – ALOA, gray, flat, dimpled - MOX)



Streaking onto TSA-YE



Incubation 18 h – 24 h at 37°C



Gram Stain, Beta-Hemolysis, L-Rhamnose, D-Xylose

Appendix 3 - Kit insert(s)

See attached

Appendix 4 - Artificial inoculations

N° Sample	Product	Artificial contaminations					Global result
		Strain	Origin	Injury protocol	Injury measurement	Inoculation level/25g	
6851	Process water (vegetables industry)	<i>L. grayi</i> Ad1295	Environment	10min 56°C	0.25	3-2-1-4-5 (3.0)	-
6852	Process water (vegetables industry)	<i>L. grayi</i> Ad1295	Environment	10min 56°C	0.25	3-2-1-4-5 (3.0)	-
262	Cooked fillet of fish	<i>L. grayi</i> Ad1490	Fish/vegetables pie	48h 4°C	Seeding	1-0-1-1-0 (0.6)	-
5075	Fermented milk	<i>L. innocua</i> 16969	Milk	pH 4 -2 months	0.26	4-3-7-9-6(5.8)	+
5076	Fermented milk	<i>L. innocua</i> 16969	Milk	pH 4 -2 months	0.26	4-3-7-9-6(5.8)	+
5069	Pasteurized milk cheese	<i>L. innocua</i> 915	Milk	HT 56°C 10 min	0.41	2-6-3-6-5(4.4)	-
5070	Pasteurized milk cheese	<i>L. innocua</i> 915	Milk	HT 56°C 10 min	0.41	2-6-3-6-5(4.4)	-
5071	Pasteurized milk cheese	<i>L. innocua</i> 915	Milk	HT 56°C 10 min	0.41	2-6-3-6-5(4.4)	-
5072	Pasteurized milk cheese	<i>L. innocua</i> 915	Milk	HT 56°C 10 min	0.41	2-6-3-6-5(4.4)	-
241	Prawns	<i>L. innocua</i> Ad1200	Fish filet	4°C 2 months	0.13	4-6-2-2-5 (3.8)	+
242	Crayfish	<i>L. innocua</i> Ad1200	Fish filet	4°C 2 months	0.13	4-6-2-2-5 (3.8)	+
5067	Ready to eat meal (beef with dressing)	<i>L. innocua</i> Ad1207	Milk	HT 56°C 10 min	0.51	9-7-5-7-4(6.4)	-
5068	Ready to eat meal (beef Bourguignon)	<i>L. innocua</i> Ad1207	Ground beef	HT 56°C 10 min	0.51	9-7-5-7-4(6.4)	+
260	Scallops with leeks	<i>L. innocua</i> Ad1230	Scallops/prawns	48h 4°C	Seeding	3-3-2-1-1 (2.0)	+
261	Cooked fish	<i>L. innocua</i> Ad1230	Scallops/prawns	48h 4°C	Seeding	3-3-2-1-1 (2.0)	+
256	Process water (ham production)	<i>L. innocua</i> Ad1266	Environment	pH 10 2 months	0.24	5-3-3-3-3 (3.4)	+
257	Process water (fish industry)	<i>L. innocua</i> Ad1266	Environment	pH 10 2 months	0.24	5-3-3-3-3 (3.4)	+
258	Process water (fish industry)	<i>L. innocua</i> Ad1266	Environment	pH 10 2 months	0.24	5-3-3-3-3 (3.4)	+
6835	Wipe (fish industry materials)	<i>L. innocua</i> Ad1677	Environment	4°C/2 days	Seeding	4-5-7-4-3 (4.6)	+
6836	Wipe (fish industry materials)	<i>L. innocua</i> Ad1677	Environment	4°C/2 days	Seeding	4-5-7-4-3 (4.6)	+
5182	Dressing (mushrooms)	<i>L. ivanovii</i> Ad1737	Raw milk cheese	-20°C 9 days	Seeding	4-5-2-3-2(3.2)	+
5183	Dressing (cream)	<i>L. ivanovii</i> Ad1737	Raw milk cheese	-20°C 9 days	Seeding	4-5-2-3-2(3.2)	-

N° Sample	Product	Artificial contaminations					Global result
		Strain	Origin	Injury protocol	Injury measurement	Inoculation level/25g	
6857	Process water (fish industry)	<i>L. ivanovii</i> Ad1752	Environment	10min 56°C	1.49	5-4-3-4-3 (3.8)	+
5179	Dressing (sorrel)	<i>L. ivanovii</i> Ad991	Roquefort	-20°C 9 days	Seeding	17-10-13-12- 17(13.8)	-
5180	Dressing (green pepper)	<i>L. ivanovii</i> Ad991	Roquefort	-20°C 9 days	Seeding	17-10-13-12- 17(13.8)	+
5181	Dressing (mushrooms)	<i>L. ivanovii</i> Ad991	Roquefort	-20°C 9 days	Seeding	17-10-13-12- 17(13.8)	+
4771	Pasteurized fresh cream	<i>L. monocytogenes</i> 18312	Milk	HT 56°C 10 min	0.38	3-5-7-7-6(5.6)	-
4772	Pasteurized half skimmed milk	<i>L. monocytogenes</i> 18312	Milk	HT 56°C 10 min	0.38	3-5-7-7-6(5.6)	-
4774	Fermented milk	<i>L. monocytogenes</i> 909	Milk	pH4 -2 months	0.47	3-5-7-4-4(4.6)	+
4760	Ready to eat meal (pork meat with dressing)	<i>L. monocytogenes</i> A00C014	Sausages	HT 56°C 10 min	0.62	4-5-9-5-5(5.6)	+
6830	Wipe (fish industry materials)	<i>L. monocytogenes</i> AA0E033	Environment	4°C/2 days	Seeding	6-2-4-2-2 (3.2)	+
6831	Wipe (fish industry materials)	<i>L. monocytogenes</i> AA0E033	Environment	4°C/2 days	Seeding	6-2-4-2-2 (3.2)	+
6832	Wipe (fish industry materials)	<i>L. monocytogenes</i> AA0E033	Environment	4°C/2 days	Seeding	6-2-4-2-2 (3.2)	-
5174	Frozen artichokes	<i>L. monocytogenes</i> Ad 1212	Mushrooms	-20°C-4 days	Seeding	6-3-11-5-6(6.2)	+
5175	Frozen tomatoes	<i>L. monocytogenes</i> Ad 1212	Mushrooms	-20°C-4 days	Seeding	6-3-11-5-6(6.2)	+
236	Seafood cocktail	<i>L. monocytogenes</i> Ad1192	Fish filet	4°C 2 month	0.21	4-3-9-2-4 (4.4)	+
5184	Vanilla profiteroles	<i>L. monocytogenes</i> Ad1195	Omelet	-20°C-4 days	Seeding	5-9-10-2-10(7.2)	+
5185	Pastry (Paris Brest)	<i>L. monocytogenes</i> Ad1195	Omelet	-20°C-4 days	Seeding	5-9-10-2-10(7.2)	+
4757	Ready to eat meal (beef with dressing)	<i>L. monocytogenes</i> Ad1218	Ground beef	HT 56°C 10 min	0.5	5-3-2-6-7(4.6)	+
4758	Ready to eat meal (beef tongue with dressing)	<i>L. monocytogenes</i> Ad1218	Ground beef	HT 56°C 10 min	0.5	5-3-2-6-7(4.6)	+
4759	Ready to eat meal (beef balls with dressing)	<i>L. monocytogenes</i> Ad1218	Ground beef	HT 56°C 10 min	0.5	5-3-2-6-7(4.6)	+
251	Process water (ham production)	<i>L. monocytogenes</i> Ad1278	Environment	pH10 2 months	0.2	6-6-4-7-6 (5.8)	+

N° Sample	Product	Artificial contaminations					Global result
		Strain	Origin	Injury protocol	Injury measurement	Inoculation level/25g	
245	Salmon smoked tartar	<i>L. monocytogenes</i> Ad1279	Smoked fish	NaCl 10% 2 months	0.18	5-1-1-6-6 (3.8)	+
246	Smoked salmon	<i>L. monocytogenes</i> Ad1279	Smoked fish	NaCl 10% 2 month	0.18	5-1-1-6-6 (3.8)	+
243	Sliced salmon	<i>L. monocytogenes</i> Ad1412	Smoked salmon	NaCl 10% 2 months	0.48	9-8-8-1-6 (6.4)	+
244	Marinated salmon	<i>L. monocytogenes</i> Ad1413	Smoked salmon	NaCl 10% 2 months	0.48	9-8-8-1-6 (6.4)	+
231	Prawns	<i>L. monocytogenes</i> Ad1499	Trout eggs	4°C 2 months	0.22	9-14-5-6-5 (6.8)	+
6849	Process water (vegetables industry)	<i>L. monocytogenes</i> Ad1672	Environment	10 min 56°C	0.06	3-4-1-3-1 (2.4)	-
6850	Process water (vegetables industry)	<i>L. monocytogenes</i> Ad1672	Environment	10 min 56°C	0.06	3-4-1-3-1 (2.4)	-
6837	Wipe (fish industry materials)	<i>L. monocytogenes</i> Ad1679	Environment	4°C/2 days	Seeding	4-5-9-3-5 (5.2)	+
6838	Wipe (fish industry materials)	<i>L. monocytogenes</i> Ad1679	Environment	4°C/2 days	Seeding	4-5-9-3-5 (5.2)	-
6855	Process water (fish industry)	<i>L. monocytogenes</i> Ad243	Environment	10 min 56°C	1.02	0-3-5-3-3 (2.8)	-
6856	Process water (fish industry)	<i>L. monocytogenes</i> Ad243	Environment	10 min 56°C	1.02	0-3-5-3-3 (2.8)	-
5066	Roasted ground poultry meat	<i>L. monocytogenes</i> Ad266	Chicken	HT 56°C 10min	0.47	2-3-4-3-5(3.4)	-
5170	Pizza (ham, cheese)	<i>L. monocytogenes</i> Ad543	Pepper	-20°C-4 days	Seeding	2-8-8-5-2(5.0)	+
5171	Pizza (tuna, vegetables)	<i>L. monocytogenes</i> Ad543	Pepper	-20°C-4 days	Seeding	2-8-8-5-2(5.0)	+
5173	Frozen carrots	<i>L. monocytogenes</i> Ad543	Pepper	-20°C-4 days	Seeding	2-8-8-5-2(5.0)	+
6833	Wipe (fish industry materials)	<i>L. monocytogenes</i> Ad548	Environment	4°C/2 days	Seeding	3-5-2-5-4 (3.8)	+
6834	Wipe (fish industry materials)	<i>L. monocytogenes</i> Ad548	Environment	4°C/2 days	Seeding	3-5-2-5-4 (3.8)	+
4765	Pasteurized cheese (Gouda)	<i>L. monocytogenes</i> Ad610	Raw milk	HT 56°C 10 min	0.45	4-6-7-5-6(5.6)	+
4766	Pasteurized cheese (Chaumes)	<i>L. monocytogenes</i> Ad610	Raw milk	HT 56°C 10 min	0.49	1-1-7-3-5(3.4)	+
4768	Semoulina with milk	<i>L. monocytogenes</i> Ad610	Raw milk	HT 56°C 10 min	0.45	4-6-7-5-6(5.6)	+
4770	Pasteurized fresh cream	<i>L. monocytogenes</i> Ad610	Raw milk	HT 56°C 10 min	0.45	4-6-7-5-6(5.6)	+
6841	Dusts (fish industry)	<i>L. monocytogenes</i> Ad614	Environment	4°C/2 days	Seeding	4-7-2-5-7 (5.0)	+
6842	Dusts (fish industry)	<i>L. monocytogenes</i> Ad614	Environment	4°C/2 days	Seeding	4-7-2-5-7 (5.0)	+
273	Dusts (dairy industry)	<i>L. monocytogenes</i> Ad614	Dairy environment	48h 4°C	Seeding	3-3-4-1-1 (2.4)	+

N° Sample	Product	Artificial contaminations					Global result
		Strain	Origin	Injury protocol	Injury measurement	Inoculation level/25g	
274	Dusts (dairy industry)	<i>L. monocytogenes</i> Ad614	Dairy environment	48h 4°C	Seeding	3-3-4-1-1 (2.4)	-
270	Dusts (dairy industry)	<i>L. monocytogenes</i> Ad627	Dairy environment	48h 4°C	Seeding	1-0-1-2-2 (1.2)	+
6845	Dusts (fish industry)	<i>L. monocytogenes</i> Ad635	Environment	4°C/2 days	Seeding	4-5-6-3-3 (4.2)	+
6846	Dusts (fish industry)	<i>L. monocytogenes</i> Ad635	Environment	4°C/2 days	Seeding	4-5-6-3-3 (4.2)	+
4764	Pasteurized cheese (Gouda)	<i>L. monocytogenes</i> Ad665	Raw milk	HT 56°C 10min	0.45	4-6-7-5-6(5.6)	+
4769	Rice with milk	<i>L. monocytogenes</i> Ad665	Raw milk	HT 56°C 10min	0.49	1-1-7-3-5(3.4)	+
4775	Fermented milk	<i>L. monocytogenes</i> Ad665	Raw milk	pH 4 -2 months	0.65	4-4-4-3-8(4.6)	+
5073	Fermented milk	<i>L. seeligeri</i> Ad1237	Raw milk	pH 4 -2 months	0.36	15-7-9-9-10(10.0)	+
5074	Fermented milk	<i>L. seeligeri</i> Ad1237	Raw milk	pH 4 -2 months	0.36	15-7-9-9-10(10.0)	+
5256	Deli salad (bacon, potatoes)	<i>L. seeligeri</i> Ad1293	Parsley	4°C 27 days	1.05	19-15-9-12- 18(14.6)	+
5257	Deli salad (tuna, pasta)	<i>L. seeligeri</i> Ad1293	Parsley	4°C 27 days	1.05	19-15-9-12- 18(14.6)	+
5258	Deli salad (chicken, goat cheese)	<i>L. seeligeri</i> Ad1293	Parsley	4°C 27 days	1.05	19-15-9-12- 18(14.6)	+
5259	Deli salad (marinated chicken, tabouleh)	<i>L. seeligeri</i> Ad1293	Parsley	4°C 27 days	1.05	19-15-9-12- 18(14.6)	+
5260	Deli salad (rice, tuna)	<i>L. seeligeri</i> Ad1293	Parsley	4°C 27 days	1.05	19-15-9-12- 18(14.6)	+
6848	Process water (vegetables industry)	<i>L. seeligeri</i> Ad1754	Environment	10 min 56°C	1.00	10-10-18-8-12 (11.6)	-
6843	Dusts (fish industry)	<i>L. seeligeri</i> Ad651	Environment	4°C/2 days	Seeding	3-5-14-11-9 (8.4)	+
6844	Dusts (fish industry)	<i>L. seeligeri</i> Ad651	Environment	4°C/2 days	Seeding	3-5-14-11-9 (8.4)	-
6853	Process water (fish industry)	<i>L. welshimeri</i> Ad1194	Environment	10 min 56°C	1.76	5-1-4-6-3 (3.8)	+



N° Sample	Product	Artificial contaminations					Global result
		Strain	Origin	Injury protocol	Injury measurement	Inoculation level/25g	
6854	Process water (fish industry)	<i>L. welshimeri</i> Ad1194	Environment	10 min 56°C	1.76	5-1-4-6-3 (3.8)	-
5064	Cooked pork meat	<i>L. welshimeri</i> Ad1219	Pork cured meat	HT 56°C 10 min	0.36	2-2-7-5-0(3.2)	-
5065	Roasted ham	<i>L. welshimeri</i> Ad1219	Pork cured meat	HT 56°C 10 min	0.36	2-2-7-5-0(3.2)	+
6847	Dusts (fish industry)	<i>L. welshimeri</i> Ad1252	Environment	4°C/2 days	Seeding	2-3-3-4-3 (3.0)	+
239	Ground tuna	<i>L. welshimeri</i> Ad1669	Piece of fish	4°C 2 months	0.32	3-4-2-1-4 (2.8)	+
240	Fillet of Cod	<i>L. welshimeri</i> Ad1669	Piece of fish	4°C 2 months	0.32	3-4-2-1-4 (2.8)	+
6839	Wipe (fish industry materials)	<i>L. welshimeri</i> Ad642	Daurade	4°C/2 days	Seeding	6-2-2-5-3 (3.6)	-
6840	Dusts (fish industry)	<i>L. welshimeri</i> Ad642	Daurade	4°C/2 days	Seeding	6-2-2-5-3 (3.7)	+

Category	Item Type	Sample n°	Strain	Origin	Injury Protocol	Injury Evaluation (Log10)	Inoculation (CFU/Sample)	Alternative Method Result	Reference Method Result
Fresh Produce and Vegetables	Sliced apples	1	<i>L. monocytogenes</i> ATCC 51780	Dairy Product	Seeding 48 h at 5 ± 3°C	/	4.0	Positive	Positive
	Asparagus 8oz.	2						Positive	Positive
	Medjool Dates 12 oz.	4						Positive	Positive
	Pitted Dates	6						Positive	Positive
	Broccoli 8 oz.	7						Positive	Positive
	Broccoli 12 oz.	8	<i>L. monocytogenes</i> QL 030911-10	Shellfish	Seeding 48 h at 5 ± 3°C	/	5.3	Positive	Positive
	Carrot & Celery	12						Positive	Positive
	Celery Sticks	14						Positive	Positive
	Salad Kit	19						Positive	Positive
	Baby spinach	20						Positive	Positive
	Chopped salad kit	22	<i>L. innocua</i> QL 030911-8	Smoked Fish	Seeding 48 h at 5 ± 3°C	/	3.9	Positive	Positive
	Chopped Romaine	23						Positive	Positive
	Classic coleslaw	25						Positive	Positive
	Classic romaine	26						Positive	Positive
Fruit medley 48 oz.	30	Positive						Positive	

Category	Item Type	Sample n°	Strain	Origin	Injury Protocol	Injury Evaluation (Log10)	Inoculation (CFU/Sample)	Alternative Method Result	Reference Method Result
Fresh Produce and Vegetables	Pineapple chunks	32	<i>L. ivanovii</i> QL 030911-9	Human Isolate	Seeding 48 h at 5 ± 3°C	/	4.4	Positive	Positive
	Fresh Cauliflower	34						Positive	Positive
	Seedless watermelon	37						Positive	Positive
	Spring mix	41						Positive	Positive
	Garden salad	43						Positive	Positive
	Baby carrots	45	<i>L. grayi</i> QL 030911-12	Environmental Isolate	Seeding 48 h at 5 ± 3°C	/	3.8	Positive	Positive
	Romaine salad	46						Positive	Positive
	Blended salad	47						Positive	Positive
	Veggie blend salad	50						Positive	Positive
	Broccoli pearls	51						Positive	Positive
	Pineapple chunks	59	<i>L. welshimeri</i> QL 030911-7	Beef Carcass	Seeding 48 h at 5 ± 3°C	/	5.2	Positive	Positive
	Tomatoes	61						Positive	Positive
	Watermelon chunks	62						Positive	Positive
	Fresh Cauliflower	70						Positive	Positive

Appendix 5 - Sensitivity study: raw data

MEAT PRODUCTS																							Category			
N° Sample	Product	Global result	Reference method: ISO 11290-1/A1*						Alternative method : Assurance GDS <i>Listeria</i> spp Tq																	
			Half Fraser		Fraser 1		Identification	<i>Listeria</i> spp result	Half Fraser 22H 30°C						Half Fraser 22H 30°C + 72H 4°C/ Half Fraser 4h 30°C											
			OAA	Palcam	OAA	Palcam			PCR Result		Confirmations		Final result		Agreement Ref/Alt		PCR Result		Confirmations		Final result			Agreement Ref/Alt		
									4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h	4 h	22 h	4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h		4 h	22 h	
1533	Poultry meat	+	H+/H-	+	H+	+	<i>L.monocytogenes/ L.welshimeri</i>	+	+	+	H+/H-	+	+	+	+	PA	PA	+	+	H+/H-	+	+	+	PA	PA	1
1534	Sliced beef	-	st	-	st	st	/	-	-	-	st	st	-	-	NA	NA										1
1535	Gizzards	-	st	-	st	st	/	-	-	-	st	st	-	-	NA	NA										1
1536	Smoked pork sausage	+	H-	+	H-	+	<i>L.welshimeri</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA		1
1537	Merguez	+	H-	+/-3col (NC on TSYEA)	H-	+	<i>L.innocua</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA		1
1538	Pork meat	+	H+/H-	+	H+/H-	+	<i>L.monocytogenes/ L.innocua</i>	+	+	+	H+/H-	+	+	+	PA	PA	+	+	H+/H-	+	+	+	PA	PA		1
1539	Sweet bread	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA		1
1805	Merguez	-	-	-	-	-	/	-	-	-	+/- 1col	-	-	-	NA	NA										1
1806	Raw poultry meat	+	H-	+	H-	+	<i>L.welshimeri</i>	+	+	+	+/-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA		1
1807	Pork meat	-	st	st	-	st	/	-	-	-	-	-	-	-	NA	NA										1
1808	Smoked pork sausage	-	-	-	-	-	/	-	-	-	-	-	-	-	NA	NA										1
1809	Chitterling	-	st	-	-	-	/	-	-	-	-	-	-	-	NA	NA										1
1810	Roasted pork meat	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA		1
1811	Raw poultry meat	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA		1
1949	Ready to cook poultry dish	+	H-	+	H-	+	<i>L.innocua</i>	+	+	+	H-	-	+	+	PA	PA	+	+	H-	+	+	+	PA	PA		1
2068	Smoked pork sausage	-	-	-	-	-	/	-	-	-	-	-	-	-	NA	NA										1
2069	Marinated poultry meat	-	-	-	-	-	/	-	-	-	st	-	-	-	NA	NA										1
2070	Ready to eat poultry meat	+	H+	+	H+/H-	+	<i>L.monocytogenes/ L.innocua</i>	+	+	+	H+/H-	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA		1
2071	Marinated poultry meat	+	H+/H-	+	H+/H-	+	<i>L.monocytogenes/ L.welshimeri</i>	+	+	+	H+/H-	+	+	+	PA	PA	+	+	H+/H-	+	+	+	PA	PA		1
2072	Marinated beef meat	-	st	st	-	st	/	-	-	-	st	st	-	-	NA	NA										1
3339	Smoked cocktail sausages	-	-	-	-	-	/	-	-	-	+/-	-	-	-	NA	NA										1
3340	Cooked poultry meat	-	st	st	-	-	/	-	-	-	-	-	-	-	NA	NA										1
3341	Marinated beef meat	-	st	-	st	st	/	-	-	-	st	-	-	-	NA	NA										1
3342	Marinated poultry meat	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA		1
3343	Stuffed tomatoes	-	st	-	-	-	/	-	-	-	st	-	-	-	NA	NA										1
3344	Merguez	+	1H+/H-	+	H+/H-	+	<i>L.monocytogenes/ L.welshimeri</i>	+	+	+	H-	+	+	+	PA	PA	+	+	3H+/H-	+	+	+	PA	PA		1
3345	Raw sausages	+	H+/H-	+	H+	+	<i>L.monocytogenes/ L.welshimeri</i>	+	+	+	H+/1H-	+	+	+	PA	PA	+	+	H+/H-	+	+	+	PA	PA		1
3346	Marinated poultry meat	-	-	-	-	-	/	-	-	-	-	-	-	-	NA	NA										1
3347	Chitterlings	-	st	-	st	st	/	-	-	-	st	-	-	-	NA	NA										1
3348	Ham	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA		1
3349	Stuff	-	st	-	-	-	/	-	-	-	st	-	-	-	NA	NA										1
3350	Poultry meat	+	H+	+	H+/H-	+	<i>L.monocytogenes/ L.welshimeri</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA		1

* Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)

MEAT PRODUCTS

N° Sample	Product	Global result	Reference method: ISO 11290-1/A1*						Alternative method : Assurance GDS <i>Listeria</i> spp Tq														Category		
			Half Fraser		Fraser 1		Identification	<i>Listeria</i> spp result	Half Fraser 22H 30°C						Half Fraser 22H 30°C + 72H 4°C/ Half Fraser 4h 30°C										
			OAA	Palcam	OAA	Palcam			PCR Result	Confirmations		Final result		Agreement Ref/Alt		PCR Result		Confirmations		Final result		Agreement Ref/Alt			
							4 h 30°C	22 h 30°C		ALOA	Palcam	4 h	22 h	4 h	22 h	4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h	4 h		22 h	
3352	Ground beef(15% fat)	+	H-	+	H-	+	<i>L.welshimeri</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	1
3353	Delicatessen	-	st	-	-	st	/	-	-	-	st	-	-	-	NA	NA									1
3354	Cooked sausage	+	1H+/H-	+	H+/H-	+	<i>L.monocytogenes/ L.welshimeri</i>	+	+	+	H+/H-	+	+	+	PA	PA	+	+	H+/H-	+	+	+	PA	PA	1
3355	Beef meat	+	st	-	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	-	+	+	PA	PA	+	+	H+	-	+	+	PA	PA	1
3356	Gizzards	-	st	-	-	-	/	-	-	-	st	-	-	-	NA	NA									1
3357	Delicatessen(terrines)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									1
3358	Ground beef	+	H-	+	H-	+	<i>L.welshimeri</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	1
3361	Ground beef	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	1
3451	Precooked ground poultry meat	-	-	-	-	-	/	-	-	-	-	-	-	-	NA	NA									1
3452	Raw pork meat	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									1
3453	Raw turkey meat	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									1
3454	Raw poultry meat	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									1
3455	Raw beef meat	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									1
4110	Dehydrated sausage	-	st	-	st	st	/	-	-	-	st	-	-	-	NA	NA									1
4111	Dehydrated sausage	+	H-	+	H+/H-	+	<i>L.welshimeri/ L.monocytogenes</i>	+	+	+	H+/H-	+	+	+	PA	PA	+	+	H+/H-	+	+	+	PA	PA	1
4112	Dehydrated sausage	-	-	-	st	-	/	-	-	-	-	-	-	-	NA	NA									1
4113	Ready to cook plate (veal)	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	1
4114	Roe terrine	-	st	-	-	-	/	-	-	-	-	-	-	-	NA	NA									1
4115	Liver pâté	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									1
4116	Cooked poultry meat with spices	-	st	st	-	-	/	-	-	-	-	st	-	-	NA	NA									1
4117	Pâté	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									1
4620	Ground beef	+	H-	+	H-	+	<i>L.welshimeri</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	1
4755	Delicatessen(rillettes)	+	st	st	H+	+	<i>L.monocytogenes</i>	+	+	+	8H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	1
4757	Ready to eat meal (beef with dressing)	+	6H+	st	H+	+	<i>L.monocytogenes</i>	+	+	+	3H+	2+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	1
4758	Ready to eat meal (beef tongue with dressing)	+	3H+	st	H+	+	<i>L.monocytogenes</i>	+	+	+	3H+	2+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	1
4759	Ready to eat meal (beef balls with dressing)	+	7H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	6H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	1
4760	Ready to eat meal (pork meat with dressing)	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	1
5064	Cooked pork meat	-	st	st	st	-	/	-	-	-	st	st	-	-	NA	NA									1
5065	Roasted ham	+	H-	+	H-	+	<i>L.welshimeri</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	1
5066	Roasted ground poultry meat	-	st	st	-	-	/	-	-	-	st	-	-	-	NA	NA									1
5067	Ready to eat meal (beef with dressing)	-	st	-	st	st	/	-	-	-	st	st	-	-	NA	NA									1
5068	Ready to eat meal (beef Bourguignon)	+	st	st	st	st	/	-	+	+	st	1+ (<i>L.innocua</i>)	+	+	PD	PD	+	+	H-	+	+	+	PD	PD	1

MILK AND DAIRY PRODUCTS

N° Sample	Product	Global result	Reference method: ISO 11290-1/A1*						Alternative method : Assurance GDS <i>Listeria</i> spp Tq														Category			
			Half Fraser		Fraser 1		Identification	<i>Listeria</i> spp result	Half Fraser 22H 30°C				Half Fraser 22H 30°C + 72H 4°C/ Half Fraser 4h 30°C													
			OAA	Palcam	OAA	Palcam			PCR Result		Confirmations		Final result		Agreement Ref/Alt		PCR Result		Confirmations		Final result			Agreement Ref/Alt		
									4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h	4 h	22 h	4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h		4 h	22 h	
1602	Raw milk cheese	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2	
1603	Raw milk cheese (cow)	+	H+	+ 2 col	H+	+	<i>L.monocytogenes</i>	+	+	+	H+ 2col	+ 3col	+	+	PA	PA	+	+	H+ 1col	+	+	+	+	PA	PA	2
1604	Raw milk cheese (ewe)	-	-	-	-	-	/	-	-	-	-	-	-	-	NA	NA	-	-	-	-	-	-	NA	NA	2	
1605	Raw milk cheese (cow)	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2	
1606	Raw milk cheese	-	H-?	-	-	-	NC	-	-	-	-	-	-	-	NA	NA	-	i/-	-	-	-	-	NA	NA	2	
1607	Raw milk cheese	-	-	-	-	-	/	-	-	-	-	-	-	-	NA	NA	-	-	-	-	-	-	NA	NA	2	
1608	Raw milk cheese	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2	
1884	Raw milk	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									2	
1885	Raw milk	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									2	
1886	Raw milk	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									2	
1887	Raw milk	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									2	
1888	Raw milk	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									2	
1889	Raw milk	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									2	
1890	Raw milk	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2	
1943	Raw milk cheese	+	H+	-	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2	
1944	Raw milk cheese	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									2	
1945	Raw milk (ewe)	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2	
1946	Raw milk (ewe)	-	st	st	-	-	/	-	-	-	-	st	-	-	NA	NA									2	
1947	Raw milk (ewe)	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2	
1948	Raw milk	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									2	
2066	Raw milk cheese	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2	
2067	Raw milk cheese (ewe)	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2	
3433	Fermented milk	-	st	st	-	-	/	-	-	-	st	-	-	-	NA	NA									2	
3434	Fermented milk	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									2	
3435	Fermented milk	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									2	
3436	Fermented milk	-	st	-	st	-	/	-	-	-	st	st	-	-	NA	NA									2	
3437	Fermented milk	-	st	-	-	st	/	-	-	-	st	st	-	-	NA	NA									2	
3438	Fermented milk	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									2	
3439	Fermented milk	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									2	
3440	White cheese	+	H-	+	H-	H-	<i>L.innocua</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	2	
3441	Fermented milk	-	st	-	-	-	/	-	-	-	st	-	-	-	NA	NA									2	
3442	Pasteurized whole milk	-	st	st	-	-	/	-	-	-	st	st	-	-	NA	NA									2	
3443	Pasteurized whole milk	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									2	
3444	Pasteurized half skimmed milk	-	st	st	-	-	/	-	-	-	st	-	-	-	NA	NA									2	
3445	Pasteurized half skimmed milk	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									2	
3446	White cheese	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									2	
3447	White cheese	-	st	-	st	-	/	-	-	-	st	-	-	-	NA	NA									2	
3448	Whole fresh cream	-	st	st	-	-	/	-	-	-	st	-	-	-	NA	NA									2	
3449	Pasteurized whole fresh cream	-	st	st	-	-	/	-	-	-	st	-	-	-	NA	NA									2	
3450	Dairy based dessert	-	st	st	-	st	/	-	-	-	st	st	-	-	NA	NA									2	
4095	Raw milk cheese	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2	

* Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)

MILK AND DAIRY PRODUCTS

N° Sample	Product	Global result	Reference method: ISO 11290-1/A1*						Alternative method : Assurance GDS <i>Listeria</i> spp Tq														Category		
			Half Fraser		Fraser 1		Identification	<i>Listeria</i> spp result	Half Fraser 22H 30°C						Half Fraser 22H 30°C + 72H 4°C/ Half Fraser 4h 30°C										
			OAA	Palcam	OAA	Palcam			PCR Result		Confirmations		Final result		Agreement Ref/Alt		PCR Result		Confirmations		Final result			Agreement Ref/Alt	
									4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h	4 h	22 h	4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h		4 h	22 h
4096	Raw milk cheese	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2
4097	Raw milk cheese	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2
4098	Raw milk cheese	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2
4099	Milk powder	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2
4100	Milk powder	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2
4101	Milk powder	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2
4618	Breaded cheese(camembert)	-	st	-	-	-	/	-	-	-	st	st	-	-	NA	NA	-	-	-	st	-	-	NA	NA	2
4619	Butter	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									2
4764	Pasteurized cheese (Gouda)	+	H+	2+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	-	+	+	PA	PA	2
4765	Pasteurized cheese (Gouda)	+	st	2+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	4H+	-	+	+	PA	PA	2
4766	Pasteurized cheese (Chaumes)	+	1H+	st	H+	-	<i>L.monocytogenes</i>	+	+	+	5H+	2+	+	+	PA	PA	-	+	2H+	-	-	+	ND _{FN(alit)}	PA	2
4768	Semoulina with milk	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2
4769	Rice with milk	+	7H+	8+	H+	+	<i>L.monocytogenes</i>	+	+	+	3H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2
4770	Pasteurized fresh cream	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2
4771	Pasteurized fresh cream	-	st	st	-	-	/	-	-	-	st	st	-	-	NA	NA	+	+	4H+	+	+	+	PD	PD	2
4772	Pasteurized half skimmed milk	-	st	-	-	-	/	-	-	-	st	-	-	-	NA	NA									2
4774	Fermented milk	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2
4775	Fermented milk	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	2
5069	Pasteurized milk cheese	-	st	st	st	st	/	-	-	-	st	-	-	-	NA	NA									2
5070	Pasteurized milk cheese	-	st	-	-	-	/	-	-	-	st	st	-	-	NA	NA									2
5071	Pasteurized milk cheese	-	st	-	-	-	/	-	-	-	-	-	-	-	NA	NA	-	-	-	-	-	-	NA	NA	2
5072	Pasteurized milk cheese	-	st	st	st	st	/	-	-	-	-	-	-	-	NA	NA									2
5073	Fermented milk	+	H-	st	H-	+	<i>L.seeligeri</i>	+	+	+	H-	st	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	2
5074	Fermented milk	+	H-	st	H-	+	<i>L.seeligeri</i>	+	+	+	H-	-	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	2
5075	Fermented milk	+	H-	+	H-	+	<i>L.innocua</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	2
5076	Fermented milk	+	H-	+	H-	+	<i>L.innocua</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	2

FISH AND SEAFOOD PRODUCTS

N° Sample	Product	Global result	Reference method: ISO 11290-1/A1*						Alternative method : Assurance GDS <i>Listeria</i> spp Tq														Category				
			Half Fraser		Fraser 1		Identification	<i>Listeria</i> spp result	Half Fraser 22H 30°C						Half Fraser 22H 30°C + 72H 4°C/ Half Fraser 4h 30°C												
			OAA	Palcam	OAA	Palcam			PCR Result		Confirmations		Final result		Agreement Ref/Alt		PCR Result		Confirmations		Final result			Agreement Ref/Alt			
									4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h	4 h	22 h	4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h		4 h	22 h		
5801	Breaded fish with lemon	-	-	-	-	-	/	-	-	-	-	-	-	NA	NA											3	
5802	Piece of Salmon and lemon	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA			3
5803	Cooked shrimp	-	-	-	-	-	/	-	-	-	-	-	-	NA	NA												3
5804	Cooked scallops	-	st	st	st	-	/	-	-	-	st	-	-	NA	NA												3
5805	Cooked ground salmon	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA			3
5806	Ground fish	+	st	1+	H+	+	<i>L.monocytogenes</i>	+	+	+	2H+	4+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA			3
5807	Cooked scallops	+	H+	-	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	-	+	+	PA	PA	+	+	H+	+	+	+	PA	PA			3
5808	Cooked fillet of fish	-	st	-	-	-	/	-	-	-	st	-	-	NA	NA												3
5809	Cooked fillet of fish	-	st	-	-	-	/	-	-	-	st	-	-	NA	NA												3
5810	Cooked fillet of fish	+	H+/H-	+	H-	+	<i>L.monocytogenes</i> / <i>L.welshimeri</i>	+	+	+	2H+/H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA			3
5811	Salmon puff	+	-	-	-	-	/	-	-	+	- (+ at 72h: <i>L.welshimeri</i> .)	-	-	+	NA _{FN(alt)}	PD	+	+	H- (<i>L.welshimeri</i>)	-	+	+	PD	PD			3
5812	Cooked fillet of fish	+	H+/H-	+	H+/H-	+	<i>L.monocytogenes</i> / <i>L.innocua</i>	+	+	+	H+/H-	+	+	+	PA	PA	+	+	H+/H-	+	+	+	PA	PA			3
5813	Ground salmon	+	st	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	-	+	+	PA	PA	+	+	H+	+	+	+	PA	PA			3
5814	Cod salad	-	-	-	-	-	/	-	-	-	-	-	-	NA	NA												3
5815	Cooked ground salmon	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA			3
5816	Raw marinated salmon	+	H-	+	H-	+	<i>L.welshimeri</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA			3
5817	Raw salmon	-	st	-	-	-	/	-	-	-	-(x5)	-(x5)	-	-	NA	NA	-	+	st (x5)	st(x5)	-	-	NA	NA			3
5818	Ready to cook salmon	+	H+/H-	+	H+/H-	+	<i>L.monocytogenes</i> / <i>L.innocua</i>	+	+	+	H+/H-	+	+	+	PA	PA	+	+	H+/H-	+	+	+	PA	PA			3
5819	Cooked fish	+	H-	+	H+/H-	+	<i>L.monocytogenes</i> / <i>L.welshimeri</i>	+	+	+	H+/H-	+	+	+	PA	PA	+	+	H+/H-	+	+	+	PA	PA			3
5820	Smoked salmon	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA			3
5821	Smoked salmon	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA			3
5822	Salmon puff	-	-	-	-	-	/	-	-	-	-	-	-	NA	NA												3
5823	Raw tuna	+	H+/H-	+	H+/H-	+	<i>L.monocytogenes</i> / <i>L.welshimeri</i>	+	+	+	H+/H-	+	+	+	PA	PA	+	+	H+/H-	+	+	+	PA	PA			3
6701	Smoked salmon bacon	-	-	-	st	st	/	-	-	-	-	-	-	NA	NA												3
6702	Smoked salmon	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA			3
6703	Marinated salmon	-	-	-	-	-	/	-	-	-	-	-	-	NA	NA												3
6704	Smoked tuna	-	-	-	-	-	/	-	-	-	-	-	-	NA	NA												3
6705	Smoked trout	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA											3
6706	Smoked herring	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA											3
6707	Marinated smoked salmon	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA											3
6708	Smoked salmon	-	st	st	-	-	/	-	-	-	-	-	-	NA	NA												3
6709	Smoked haddock	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA											3
6710	Smoked sliced salmon	+	H-	+	H-	+	<i>L.welshimeri</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA			3
6711	Smoked sliced salmon	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA											3
6712	Salmon smoked tartar	-	-	-	-	-	/	-	-	-	-	-	-	NA	NA												3
6713	Cooked fillet of fish	-	st	-	-	-	/	-	-	-	-	-	-	NA	NA												3
6714	Fillet of fish	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA											3

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FISH AND SEAFOOD PRODUCTS

N° Sample	Product	Global result	Reference method: ISO 11290-1/A1*						Alternative method : Assurance GDS <i>Listeria spp</i> Tq														Category		
			Half Fraser		Fraser 1		Identification	<i>Listeria spp</i> result	Half Fraser 22H 30°C						Half Fraser 22H 30°C + 72H 4°C/ Half Fraser 4h 30°C										
			OAA	Palcam	OAA	Palcam			PCR Result	Confirmations		Final result		Agreement Ref/Alt		PCR Result	Confirmations		Final result		Agreement Ref/Alt				
							4 h 30°C	22 h 30°C		ALOA	Palcam	4 h	22 h	4 h	22 h		4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h		4 h	22 h
6715	Raw breaded fish	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	3
6716	Salmon tarama	-	st	-	-	-	/	-	-	-	st	st	-	-	NA	NA									3
6717	Salmon tarama	-	st	-	-	-	/	-	-	-	st	st	-	-	NA	NA									3
6718	Smoked salmon	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	3
194	Smoked salmon	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	3
231	Prawns	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	3
236	Seafood cocktail	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	3
239	Ground tuna	+	5H-	+	H-	+	<i>L.welshimeri</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	3
240	Fillet of Cod	+	H-	+	H-	+	<i>L.welshimeri</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	3
241	Prawns	+	H-	+	H-	+	<i>L.innocua</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	3
242	Crayfish	+	H-	+	H-	+	<i>L.innocua</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	3
243	Sliced salmon	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	3
244	Marinated salmon	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	3
245	Salmon smoked tartar	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	3
246	Smoked salmon	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	3
260	Scallops with leeks	+	H-	+	H-	+	<i>L.innocua</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	3
261	Cooked fish	+	H-	+	H-	+	<i>L.innocua</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	3
262	Cooked fillet of fish	-	-	-	-	-	/	-	-	-	-	-	-	-	NA	NA									3
277	Smoked salmon	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	3
343	Prawns	-	-	-	-	-	/	-	-	-	-	-	-	-	NA	NA									3
344	Prawns	-	st	st	-	-	/	-	-	-	-	-	-	-	NA	NA									3
345	Prawns	-	st	-	-	-	/	-	-	-	-	-	-	-	NA	NA									3
346	Prawns	-	st	-	-	-	/	-	-	-	-	-	-	-	NA	NA									3
347	Prawns	-	-	-	st	st	/	-	-	-	-	-	-	-	NA	NA									3
348	Cod fillet	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									3
349	Fillet of Haddock	-	st	-	-	-	/	-	-	-	st	-	-	-	NA	NA									3

READY-TO-EAT, READY-TO-REHEAT OR READY-TO-COOK PRODUCTS																							Category		
N° Sample	Product	Global result	Reference method: ISO 11290-1/A1*						Alternative method : Assurance GDS <i>Listeria</i> spp Tq																
			Half Fraser		Fraser 1		Identification	<i>Listeria</i> spp result	Half Fraser 22H 30°C						Half Fraser 22H 30°C + 72H 4°C/ Half Fraser 4h 30°C										
			OAA	Palcam	OAA	Palcam			PCR Result		Confirmations		Final result		Agreement Ref/Alt		PCR Result		Confirmations		Final result			Agreement Ref/Alt	
4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h	4 h	22 h	4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h	4 h	22 h	4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h	4 h	22 h		
3351	Ham and butter sandwich	-	st	-	st	st	/	-	-	-	st	-	-	-	NA	NA									4
3359	Pancake with mushrooms	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
3360	Croque Kebab	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
4057	Vegetables terrine	+	H-	-	H-	+	<i>L.welshimeri</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	-	+	+	PA	PA	4
4102	Roll of puff pastry	-	st	-	-	-	/	-	-	-	st	-	-	-	NA	NA									4
4103	Deli salad (vegetables)	-	st	-	-	-	/	-	-	-	st	-	-	-	NA	NA									4
4104	Deli salad(pasta)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									4
4105	Cubes of sweet potatoes	+	H+/H-	+	H+/H-	+	<i>L.innocua/ L.monocytogenes</i>	+	+	+	H+/H-	+	+	+	PA	PA	+	+	H+/H-	+	+	+	PA	PA	4
4106	Roll of puff pastry	-	st	-	-	-	/	-	-	-	st	-	-	-	NA	NA									4
4107	Sliced vegetables	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	-	+	+	PA	PA	+	+	H+	-	+	+	PA	PA	4
4108	Sandwich (ham, goat cheese)	-	st	-	-	-	/	-	-	-	st	-	-	-	NA	NA									4
4109	Ready to cook plate (poultry)	+	H+/H-	-	H+/H-	+	<i>L.innocua/ L.monocytogenes</i>	+	+	+	H+/H-	-	+	+	PA	PA	+	+	H+/H-	-	+	+	PA	PA	4
4193	Potatoes purée	+	H-	+	H-	+	<i>L.innocua</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	4
4617	Cake with cream	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA	-	-	st	st	-	-	NA	NA	4
4621	Sliced tomatoes	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									4
4622	Salad	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									4
4623	Couscous seeds	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
4624	Spinach	+	-	-	H+	+	<i>L.monocytogenes</i>	+	-	+	-(Few H+ colonies at 72H)	-	-	+	ND _{FN(alt)}	PA	+	+	H+	+	+	+	PA	PA	4
4625	Puck leek and potatoes	-	-	-	-	-	/	-	-	-	-	-	-	-	NA	NA	-	+	-	-	-	-	NA	NA	4
4626	Paella	+	H-?	-	H-	+	<i>L.innocua</i>	+	+	+	1H-	-	+	+	PA	PA	+	+	H-/1H+	+	+	+	PA	PA	4
4627	Green pepper dressing	-	st	-	-	-	/	-	-	-	st	st	-	-	NA	NA	-	-	st	-	-	-	NA	NA	4
4628	Frozen coliflower purée	-	st	-	st	st	/	-	-	-	st	-	-	-	NA	NA									4
4629	Geen beans purée	+	H+	-	H+	-	<i>L.monocytogenes</i>	+	+	+	H+	-	+	+	PA	PA	+	+	H+	-	+	+	PA	PA	4
4630	Stuffed tomatoes	+	-	+2col	H-	+	<i>L.welshimeri</i>	+	+	+	-(H- at 72H)	-	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	4
4631	Deli salad(fish)	+	-	+2col	H+	+	<i>L.monocytogenes</i>	+	+	+	H+/H-	+/-	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
4632	Sandwich (poultry , tomatoe)	+	H+/1H-	+	H+	+	<i>L.welshimeri/ L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
4633	Pastry with coffee cream	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
4634	Deli salad (vegetables, egg, ham)	-	-	-	-	-	/	-	-	-	-	-	-	-	NA	NA	-	-	-	-	-	-	NA	NA	4
4635	Pastry	-	-	-	-	-	/	-	-	-	-	-	-	-	NA	NA									4
4636	Sandwich (ham, egg)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									4
4637	Sandwich (ham, butter)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA	-	-	st	st	-	-	NA	NA	4
4638	Sandwich (ham, cheese)	-	st	-	-	-	/	-	-	-	st	st	-	-	NA	NA									4
4639	Cake	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									4
4748	Toasted croque monsieur	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
4749	Roll of puff pastry	-	-	-	-	-	/	-	+	-	-	-	-	-	PD _{FP(alt)}	NA	-	-	-	-	-	-	NA	NA	4

* Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)

READY-TO-EAT, READY-TO-REHEAT OR READY-TO-COOK PRODUCTS																								Category	
N° Sample	Product	Global result	Reference method: ISO 11290-1/A1*						Alternative method : Assurance GDS <i>Listeria</i> spp Tq																
			Half Fraser		Fraser 1		Identification	<i>Listeria</i> spp result	Half Fraser 22H 30°C						Half Fraser 22H 30°C + 72H 4°C/ Half Fraser 4h 30°C										
			OAA	Palcam	OAA	Palcam			PCR Result		Confirmations		Final result		Agreement Ref/Alt		PCR Result		Confirmations		Final result		Agreement Ref/Alt		
									4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h	4 h	22 h	4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h	4 h	22 h	
4750	Grated bread with cheese and bacon	+	H+	+	H+	+	L.monocytogenes	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
4751	Croque Kebab	-	-	-	-	-	/	-	-	-	st	st	-	-	NA	NA									4
4752	Green beans	-	-	-	-	-	/	-	-	-	-	-	-	-	NA	NA									4
4753	Frozen spinach	+	H+	+	H+	+	L.monocytogenes	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
4754	Frozen vegetables mix	-	-	st	-	-	/	-	-	-	-	st	-	-	NA	NA									4
4756	Frozen vegetables mix	-	st	st	-	-	/	-	-	-	st	st	-	-	NA	NA									4
5077	Sandwich (chicken, vegetables)	+	H+	+	H+	+	L.monocytogenes	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
5078	Sandwich (chicken, cheese)	-	st	-	-	-	/	-	-	-	-	-	-	-	NA	NA									4
5079	Sandwich (ham, cheese)	-	st	-	-	-	/	-	-	-	-	-	-	-	NA	NA									4
5080	Deli salad(vegetables)	-	-	-	-	-	/	-	-	-	-	-	-	-	NA	NA									4
5081	Sandwich (smoked chicken, goat cheese, vegetables)	+	H-	3+	H-	+	L.welshimeri	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	4
5082	Deli salad	-	st	st	-	-	/	-	-	-	st	st	-	-	NA	NA									4
5083	Sandwich (ham, egg, tomato)	+	H+	+	H+	+	L.monocytogenes	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
5084	Sandwich (ham, egg)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA									4
5085	Cakes (macaron)	-	st	st	-	-	/	-	-	-	st	st	-	-	NA	NA									4
5086	Sliced cooked eggs	+	1H+	2+	H+	+	L.monocytogenes	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
5170	Pizza (ham, cheese)	+	H++	+	H+	+	L.monocytogenes	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
5171	Pizza (tuna, vegetables)	+	H+	+	H+	+	L.monocytogenes	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
5173	Frozen carrots	+	H+	+	H+	+	L.monocytogenes	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
5174	Frozen artichokes	+	H+	+	H+	+	L.monocytogenes	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
5175	Frozen tomatoes	+	H+	+	H+	+	L.monocytogenes	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
5179	Dressing(sorrel)	-	st	st	-	-	/	-	-	-	st	st	-	-	NA	NA									4
5180	Dressing (green pepper)	+	H+	+	H+	+	L.ivanovii	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
5181	Dressing (mushrooms)	+	H+	+	H+	+	L.ivanovii	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
5182	Dressing (mushrooms)	+	H+	+	H+	+	L.ivanovii	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
5183	Dressing (cream)	-	st	-	-	-	/	-	-	-	st	-	-	-	NA	NA									4
5184	Vanilla profiterolles	+	H+	+	H+	+	L.monocytogenes	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
5185	Pastry (Paris-brest)	+	H+	+	H+	+	L.monocytogenes	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	4
5256	Deli salad (bacon, potatoes)	+	H-	+	H-	+	L.innocua	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	4
5257	Deli salad (tuna, pasta)	+	H-	+	H-	+	L.seeligeri	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	4
5258	Deli salad (chicken, goat cheese)	+	H-	+	H-	+	L.seeligeri	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	4
5259	Deli salad (marinated chicken, tabouleh)	+	H-	+	H-	+	L.seeligeri	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	4
5260	Deli salad (rice, tuna)	+	H-	+	H-	+	L.seeligeri	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	4

ENVIRONMENTAL SAMPLES

N° Sample	Product	Global result	Reference method: ISO 11290-1/A1*						Alternative method : Assurance GDS <i>Listeria</i> spp Tq														Category				
			Half Fraser		Fraser 1		Identification	<i>Listeria</i> spp result	Half Fraser 22H 30°C						Half Fraser 22H 30°C + 72H 4°C/ Half Fraser 4h 30°C												
			OAA	Palcam	OAA	Palcam			PCR Result		Confirmations		Final result		Agreement Ref/Alt		PCR Result		Confirmations		Final result			Agreement Ref/Alt			
									4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h	4 h	22 h	4 h 30°C	22 h 30°C	ALOA	Palcam	4 h	22 h		4 h	22 h		
5261	Process water (fish industry)	-	-	-	-	-	/	-	-	-	-	-	-	NA	NA											5	
5262	Process water (fish industry)	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	PA	PA	5
5263	Process water (fish industry)	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	PA	PA	5
5264	Process water (fish industry)	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	PA	PA	5
5265	Process water (fish industry)	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	PA	PA	5
5266	Wipe (floor)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
5267	Wipe (sewer)	+	H+	+	H+	+	<i>L.monocytogenes</i> / <i>L.welshimeri</i>	+	+	+	H+	+	+	+	PA	PA	+	+	1H-/H+	+	+	+	PA	PA	PA	PA	5
5268	Wipe (floor sewer)	-	-	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
5269	Wipe (floor)	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	PA	PA	5
5270	Wipe (sewer)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
5271	Wipe (floor)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
5272	Wipe (floor)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
5273	Wipe (sewer)	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	PA	PA	5
5274	Wipe (floor)	+	H-	+	H-	+	<i>L.welshimeri</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	PA	PA	5
5275	Wipe (fridge floor)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
5276	Dusts (Fish industry)	-	-	-	-	-	/	-	-	-	-	-	-	-	NA	NA										5	
5277	Dusts (Fish industry)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
5278	Dusts (Fish industry)	-	-	st	st	st	/	-	-	-	-	st	-	-	NA	NA										5	
5279	Dusts (Fish industry)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
5280	Dusts (Fish industry)	-	st	-	-	-	/	-	-	-	-	-	-	-	NA	NA										5	
6259	Wipe(box)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6260	Wipe (box)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6261	Wipe (vegetables industry)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6262	Wipe (vegetables industry)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6263	Wipe (vegetables industry)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6264	Wipe (vegetables industry)	-	st	-	-	-	/	-	-	-	st	st	-	-	NA	NA										5	
6265	Wipe (vegetables industry)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6266	Wipe (box)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6267	Wipe (vegetables industry)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6268	Wipe (vegetables industry)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6269	Wipe (vegetables industry)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6270	Wipe (vegetables industry)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6271	Wipe (vegetables industry)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6272	Wipe (vegetables industry)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6273	Wipe (vegetables industry)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6274	Process water (vegetables industry)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6275	Process water (vegetables industry)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6276	Process water (vegetables industry)	-	st	st	st	st	/	-	-	-	st	st	-	-	NA	NA										5	
6277	Process water (vegetables industry)	-	st	st	st	-	/	-	-	-	st	st	-	-	NA	NA										5	
6830	Wipe (fish industry materials)	+	H-	+	H-	+	<i>L.innocua</i>	+	+	+	H-	+	+	+	PA	PA	+	+	H-	+	+	+	PA	PA	PA	PA	5
6831	Wipe (fish industry materials)	+	H+	+	H+	+	<i>L.monocytogenes</i>	+	+	+	H+	+	+	+	PA	PA	+	+	H+	+	+	+	PA	PA	PA	PA	5

* Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)



FRESH PRODUCE AND VEGETABLES

Item Type	Sample n°	Reference Method: ISO 11290-1:2017				Alternative Method: GDS <i>Listeria species</i> Tq						
		MOX	ALOA	Confirm	Final Result	PCR		72 Hour Hold PCR		Confirmation	Final Result	Agreement
						4 Hour	22 Hour	4 Hour	22 Hour			
Sliced apples	1	+	+	+	+	+	+	+	+	+	+	PA
Asparagus 8oz.	2	+	+	+	+	+	+	+	+	+	+	PA
Asparagus 8.25 oz.	3	-	-	-	-	-	-	-	-	-	-	NA
Medjool Dates 12 oz.	4	+	+	+	+	+	+	+	+	+	+	PA
Medjool Dates 16 oz.	5	-	-	-	-	-	-	-	-	-	-	NA
Pitted Dates	6	+	+	+	+	+	+	+	+	+	+	PA
Broccoli 8 oz.	7	+	+	+	+	+	+	+	+	+	+	PA
Broccoli 12 oz.	8	+	+	+	+	+	+	+	+	+	+	PA
Squash 8 oz.	9	-	-	-	-	-	-	-	-	-	-	NA
Cantaloupe 8 oz.	10	-	-	-	-	-	-	-	-	-	-	NA
Cantaloupe 12 oz.	11	-	-	-	-	-	-	-	-	-	-	NA
Carrot & Celery	12	+	+	+	+	+	+	+	+	+	+	PA
Celery Sticks	13	-	-	-	-	-	-	-	-	-	-	NA
Celery Sticks	14	+	+	+	+	+	+	+	+	+	+	PA
Diced Red Onions	15	-	-	-	-	-	-	-	-	-	-	NA
Organic Apple Slices	16	-	-	-	-	-	-	-	-	-	-	NA
Diced Yellow Onions	17	-	-	-	-	-	-	-	-	-	-	NA
Blend Salad	18	-	-	-	-	-	-	-	-	-	-	NA
Salad Kit	19	+	+	+	+	+	+	+	+	+	+	PA
Baby spinach	20	+	+	+	+	+	+	+	+	+	+	PA
Salad mix	21	-	-	-	-	-	-	-	-	-	-	NA
Chopped salad kit	22	+	+	+	+	+	+	+	+	+	+	PA
Chopped Romaine	23	+	+	+	+	+	+	+	+	+	+	PA
Asian Salad kit	24*	+	+	+	+	+	+	+	+	+	+	PA
Classic coleslaw	25	+	+	+	+	+	+	+	+	+	+	PA
Classic romaine	26	+	+	+	+	+	+	+	+	+	+	PA
Summer salad kit	27	-	-	-	-	-	-	-	-	-	-	NA
Fruit medley 10 oz.	28	-	-	-	-	-	-	-	-	-	-	NA

1. The confirmation procedures included a Gram stain, Beta-Haemolysis, L-Rhamnose and D-Xylose.

*Indicates a naturally contaminated sample



FRESH PRODUCE AND VEGETABLES

Item Type	Sample n°	Reference Method: ISO 11290-1:2017				Alternative Method: GDS <i>Listeria species</i> Tq						
		MOX	ALOA	Confirm	Final Result	PCR		72 Hour Hold PCR		Confirmation	Final Result	Agreement
						4 Hour	22 Hour	4 Hour	22 Hour			
Fruit medley 24 oz.	29	-	-	-	-	-	-	-	-	-	-	NA
Fruit medley 48 oz.	30	+	+	+	+	+	+	+	+	+	+	PA
Mixed berries 24 oz.	31	-	-	-	-	-	-	-	-	-	-	NA
Pineapple chunks	32	+	+	+	+	+	+	+	+	+	+	PA
Fresh Squash	33	-	-	-	-	-	-	-	-	-	-	NA
Fresh Cauliflower	34	+	+	+	+	+	+	+	+	+	+	PA
Sweet potato	35	-	-	-	-	-	-	-	-	-	-	NA
Honeydew chunks	36	-	-	-	-	-	-	-	-	-	-	NA
Seedless watermelon	37	+	+	+	+	+	+	+	+	+	+	PA
Jicama sticks	38	-	-	-	-	-	-	-	-	-	-	NA
Baby spinach	39	-	-	-	-	-	-	-	-	-	-	NA
Spring mix	40	-	-	-	-	-	-	-	-	-	-	NA
Spring mix	41	+	+	+	+	+	+	+	+	+	+	PA
Garden salad	42	-	-	-	-	-	-	-	-	-	-	NA
Garden salad	43	+	+	+	+	+	+	+	+	+	+	PA
Coleslaw salad	44	-	-	-	-	-	-	-	-	-	-	NA
Baby carrots	45	+	+	+	+	+	+	+	+	+	+	PA
Romaine salad	46	+	+	+	+	+	+	+	+	+	+	PA
Blended salad	47	+	+	+	+	+	+	+	+	+	+	PA
Shredded carrots	48	-	-	-	-	-	-	-	-	-	-	NA
Vegetable medley	49	-	-	-	-	-	-	-	-	-	-	NA
Veggie blend salad	50	+	+	+	+	+	+	+	+	+	+	PA
Broccoli pearls	51	+	+	+	+	+	+	+	+	+	+	PA
Brussel sprouts	52	-	-	-	-	-	-	-	-	-	-	NA
Cauliflower pearls	53	-	-	-	-	-	-	-	-	-	-	NA
Snap peas	54	-	-	-	-	-	-	-	-	-	-	NA
Turnip greens	55	-	-	-	-	-	-	-	-	-	-	NA
Mango chunks	56	-	-	-	-	-	-	-	-	-	-	NA

1. The confirmation procedures included a Gram stain, Beta-Haemolysis, L-Rhamnose and D-Xylose.

FRESH PRODUCE AND VEGETABLES

Item Type	Sample n°	Reference Method: ISO 11290-1:2017				Alternative Method: GDS <i>Listeria species</i> Tq						
		MOX	ALOA	Confirm	Final Result	PCR		72 Hour Hold PCR		Confirmation	Final Result	Agreement
						4 Hour	22 Hour	4 Hour	22 Hour			
Sweet peppers	57	-	-	-	-	-	-	-	-	-	-	NA
Pineapple cored	58	-	-	-	-	-	-	-	-	-	-	NA
Pineapple chunks	59	+	+	+	+	+	+	+	+	+	+	PA
Chopped salad	60	-	-	-	-	-	-	-	-	-	-	NA
Tomatoes	61	+	+	+	+	+	+	+	+	+	+	PA
Watermelon chunks	62	+	+	+	+	+	+	+	+	+	+	PA
Mixed berries	63*	+	+	+	+	+	+	+	+	+	+	PA
Squash	64	-	-	-	-	-	-	-	-	-	-	NA
Zucchini	65	-	-	-	-	-	-	-	-	-	-	NA
Mixed melon	66*	-	-	-	-	-	-	-	-	-	-	NA
Coleslaw salad	67*	+	+	+	+	+	+	+	+	+	+	PA
Baby carrots	68*	+	+	+	+	+	+	+	+	+	+	PA
Fresh Squash	69	+	+	+	+	+	+	+	+	+	+	PA
Fresh Cauliflower	70	+	+	+	+	+	+	+	+	+	+	PA
Pineapple cored	71*	+	+	+	+	+	+	+	+	+	+	PA
Pineapple chunks	72*	+	+	+	+	+	+	+	+	+	+	PA

1. The confirmation procedures included a Gram stain, Beta-Haemolysis, L-Rhamnose and D-Xylose.

*Indicates a naturally contaminated sample

Appendix 6 - RLOD: raw data

Sausage

Listeria monocytogenes Ad669 Total viable count: 2.0 10²/g

Sample N°	Level	Inoculation level (cfu/25g)	ISO 11290-1 [♦] method					Positive/ Total	GDS <i>Listeria</i> spp					
			Half-Fraser		Fraser		Listeria spp result		PCR result-4H	PCR result-22H	Confirmation		Final result	Positive/ Total
			OAA	Palcam	OAA	Palcam					OAA	Palcam		
3524	0	/	st	st	st	st	-	-	-	st	st	-	0/6	
3525			st	-	-	-	-	-	-	st	st	-		
3526			-	-	-	-	-	-	-	-	-	-		
3527			st	st	st	st	-	-	-	st	st	-		
3528			st	st	st	st	-	-	-	st	st	-		
3529			st	-	st	st	-	-	-	st	st	-		
3664	1	0.3	st	st	st	st	-	-	-	st	st	-	0/6	
3665			st	st	st	st	-	-	-	st	st	-		
3666			st	st	st	st	-	-	-	st	st	-		
3667			st	st	st	st	-	-	-	st	st	-		
3668			st	st	st	st	-	-	-	-	st	-		
3669	st	st	st	st	-	-	-	st	st	-				
3670	2	0.5	H+	+	/	/	+	+	+	H+	+	+	2/6	
3671			-	-	-	-	-	-	-	-	-	-		
3672			st	st	st	st	-	-	-	st	st	-		
3673			st	st	st	st	-	-	-	st	st	-		
3674			st	st	st	st	-	-	-	st	st	-		
3675	H+	+	/	/	+	+	+	H+	+	+				
3676	3	1.1	H+	+	/	/	+	+	+	H+	+	+	5/6	
3677			H+	+	/	/	+	+	+	H+	+	+		
3678			H+	+	/	/	+	+	+	H+	+	+		
3679			H+	+	/	/	+	+	+	H+	+	+		
3680			H+	+	/	/	+	+	+	H+	+	+		
3681			st	st	st	st	-	-	-	st	st	-		
3682	4	2.2	H+	+	/	/	+	+	+	H+	+	+	6/6	
3683			H+	+	/	/	+	+	+	H+	+	+		
3684			H+	+	/	/	+	+	+	H+	+	+		
3685			H+	+	/	/	+	+	+	H+	+	+		
3686			H+	+	/	/	+	+	+	H+	+	+		
3687			H+	+	/	/	+	+	+	H+	+	+		

♦ Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)

Fresh goat cheese

Total viable count: 1.8 10⁷/g
Listeria monocytogenes Ad618

Sample N°	Level	Inoculation level (cfu/25g)	ISO 11290-1 [♦] method					GDS <i>Listeria spp</i>							
			Half-Fraser		Fraser		Listeria spp result	Positive/Total	PCR result-4H	PCR result-22H	Confirmation		Final result	Positive/ Total	
			OAA	Palcam	OAA	Palcam					OAA	Palcam			
3518	0	/	st	-	-	-	-	0/6	-	-	-	-	-	0/6	
3519			-	-	-	-	-		-	-	-	-	-		
3520			-	-	-	-	-		-	-	-	-	-		
3521			-	-	-	-	-		-	-	-	-	-		
3522			-	-	-	-	-		-	-	-	-	-		
3523			-	-	-	-	-		-	-	-	-	-		
3576	1	0.2	H+	+	/	/	+	1/6	+	+	H+	+	+	1/6	
3577			-	-	-	-	-		-	-	-	-	-		
3578			-	-	-	-	-		-	-	-	St	-		-
3579			-	-	-	-	-		-	-	-	-	-		-
3580			-	-	-	-	-		-	-	-	-	-		-
3581			-	St	-	-	-		-	-	-	-	-		-
3582	2	0.4	-	St	-	-	-	2/6	-	-	-	-	-	2/6	
3583			H+	+	/	/	+		+	+	H+	+	+		
3584			-	-	-	-	-		-	-	-	-	-		
3585			-	St	-	-	-		-	-	-	-	-		
3586			-	-	-	-	-		-	-	-	-	-		
3587			H+	+	/	/	+		+	+	H+	+	+		
3588	3	0.8	-	-	-	-	-	4/6	-	-	-	-	-	4/6	
3589			H+	+	/	/	+		+	+	H+	+	+		
3590			H+	+	/	/	+		+	+	H+	+	+		
3591			-	-	-	-	-		-	-	-	St	-		-
3592			H+	+	/	/	+		+	+	H+	+	+		
3593			H+	+	/	/	+		+	+	H+	+	+		

♦ Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)



Sample N°	Level	Inoculation level (cfu/25g)	ISO 11290-1 method					GDS <i>Listeria spp</i>							
			Half-Fraser		Fraser		Listeria spp result	Positive/Total	PCR result-4H	PCR result-22H	Confirmation		Final result	Positive/ Total	
			OAA	Palcam	OAA	Palcam					OAA	Palcam			
3594	4	1.6	H+	+	/	/	+	4/6	+	+	H+	+	+	4/6	
3595			H+	+	/	/	+		+	+	H+	+	+		
3596			H+	+	/	/	+		+	+	H+	+	+		
3597			-	-	-	-	-		-	-	-	-	-		-
3598			-	St	-	-	-		-	-	-	-	-		-
3599			H+	+	/	/	+		+	+	H+	+	+		+
3913	5	5	H+	+	/	/	+	6/6	+	+	H+	+	+	6/6	
3914			H+	+	/	/	+		+	+	H+	+	+		
3915			H+	+	/	/	+		+	+	H+	+	+		
3916			H+	+	/	/	+		+	+	H+	+	+		
3917			H+	+	/	/	+		+	+	H+	+	+		
3918			H+	+	/	/	+		+	+	H+	+	+		



Fresh goat cheese

Total viable count: 3.8 10⁷/g

Listeria innocua Ad636

Sample N°	Level	Inoculation level (cfu/25g)	ISO 11290-1 [♦] method					GDS <i>Listeria</i> spp							
			Half-Fraser		Fraser		<i>Listeria</i> spp result	Positive/ Total	PCR result-4H	PCR result-22H	Confirmation		Final result	Positive/Total	
			OAA	Palcam	OAA	Palcam					OAA	Palcam			
3862	0	/	-	-	-	-	-	0/6	-	-	-	-	-	0/6	
3863			st	-	-	-	-		-	-	st	-	-		
3864			st	-	-	-	-		-	-	-	st	-		-
3865			st	-	-	-	-		-	-	-	st	-		-
3866			-	-	-	-	-		-	-	-	-	-		-
3867			st	-	-	-	-		-	-	-	-	-		-
3889	1	0.3	H-	+	/	/	+	3/6	+	+	H-	+	+	3/6	
3890			H-	+	/	/	+		+	+	H-	+	+		
3891			-	-	-	-	-		-	-	-	st	-		-
3892			-	-	-	-	-		-	-	-	-	-		-
3893			st	-	st	-	-		-	-	-	st	-		-
3894			H-	+1col	H-	+	+		+	+	+	H-	+		+
3895	2	0.6	H-	+	/	/	+	3/6	+	+	H-	+	+	3/6	
3896			-	-	-	-	-		-	-	-	-	-		
3897			-	-	-	-	-		-	-	-	-	-		
3898			H-	+	/	/	+		+	+	H-	+	+		
3899			H-	+	/	/	+		+	+	H-	+	+		
3900			-	-	-	-	-		-	-	-	-	-		
3901	3	1.3	H-	+	/	/	+	5/6	+	+	H-	+	+	5/6	
3902			H-	+	/	/	+		+	+	H-	+	+		
3903			H-	+	/	/	+		+	+	H-	+	+		
3904			-	-	-	-	-		-	-	-	-	-		
3905			H-	+	/	/	+		+	+	H-	+	+		
3906			H-	+	/	/	+		+	+	H-	+	+		

♦ Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)



Sample N°	Level	Inoculation level (cfu/25g)	ISO 11290-1 [†] method					GDS <i>Listeria spp</i>						
			Half-Fraser		Fraser		<i>Listeria spp</i> result	Positive/ Total	PCR result-4H	PCR result-22H	Confirmation		Final result	Positive/Total
			OAA	Palcam	OAA	Palcam					OAA	Palcam		
3907	4	2.6	H-	+	/	/	+	5/6	+	+	H-	+	+	5/6
3908			H-	+	/	/	+		+	+	H-	+	+	
3909			H-	+	/	/	+		+	+	H-	+	+	
3910			-	-	-	-	-		-	-	-	-	-	
3911			H-	+	/	/	+		+	+	H-	+	+	
3912			H-	+	/	/	+		+	+	H-	+	+	
4050	5	3.5	H-	+	/	/	+	6/6	+	+	H-	+	+	6/6
4051			H-	+	/	/	+		+	+	H-	+	+	
4052			H-	+	/	/	+		+	+	H-	+	+	
4053			H-	+	/	/	+		+	+	H-	+	+	
4054			H-	+	/	/	+		+	+	H-	+	+	
4055			H-	+	/	/	+		+	+	H-	+	+	

Smoked salmon

Total viable count: 1.2 10⁷/g
Listeria welshimeri Ad1669

Sample N°	Level	Inoculation level (cfu/25g)	ISO 11290-1 [†] method					GDS <i>Listeria</i> spp						
			Half-Fraser		Fraser		<i>Listeria</i> spp result	Positive/Total	PCR result-4H	PCR result-22H	Confirmation		Final result	Positive/Total
			OAA	Palcam	OAA	Palcam					OAA	Palcam		
1012	0	0	st	st	st	st	-	0/0	-	-	st	st	-	0/6
1013			st	st	st	st	-		-	-	st	st	-	
1014			st	st	st	st	-		-	+	st	st	-	
1015			st	st	st	st	-		-	-	st	st	-	
1016			st	st	st	st	-		-	-	st	st	-	
1017			st	st	st	st	-		-	-	st	st	-	
1018	1	0.2	st	st	st	st	-	1/6	-	-	st	st	-	1/6
1019			st	st	st	st	-		-	-	st	-	-	
1020			st	st	st	st	-		-	-	st	-	-	
1021			st	st	st	st	-		-	-	st	st	-	
1022			H-	+	/	/	+		+	+	H-	+	+	
1023			st	st	st	st	-		-	-	st	st	-	
1024	2	0.4	st	st	st	st	-	2/6	-	-	st	st	-	2/6
1025			st	st	st	st	-		-	-	st	st	-	
1026			H-	+	/	/	+		+	+	H-	+	+	
1027			H-	+	/	/	+		+	+	H-	+	+	
1028			st	st	st	st	-		-	-	st	st	-	
1029			st	st	st	st	-		-	-	st	st	-	
1030	3	0.7	st	st	st	st	-	3/6	-	-	st	st	-	3/6
1031			H-	+	/	/	+		+	+	H-	+	+	
1032			st	st	st	st	-		-	-	st	st	-	
1033			H-	+	/	/	+		+	+	H-	+	+	
1034			H-	+	/	/	+		+	+	H-	+	+	
1035			st	st	st	st	-		-	-	st	st	-	

[†] Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)



Sample N°	Level	Inoculation level (cfu/25g)	ISO 11290-1 [†] method					GDS <i>Listeria spp</i>						
			Half-Fraser		Fraser		<i>Listeria spp</i> result	Positive/Total	PCR result-4H	PCR result-22H	Confirmation		Final result	Positive/Total
			OAA	Palcam	OAA	Palcam					OAA	Palcam		
1036	4	1.4	H-	+	/	/	+	6/6	+	+	H-	+	+	6/6
1037			H-	+	/	/	+		+	+	H-	+	+	
1038			H-	+	/	/	+		+	+	H-	+	+	
1039			H-	+	/	/	+		+	+	H-	+	+	
1040			H-	+	/	/	+		+	+	H-	+	+	
1041			H-	+	/	/	+		+	+	H-	+	+	

Potatoes purée

Total viable count: 2.0 10²/g

Listeria monocytogenes Ad279

Sample N°	Level	Inoculation level (cfu/25g)	ISO 11290-1 [♦] method					GDS <i>Listeria</i> spp						
			Half-fraser		Fraser		Listeria spp result	Positive/Total	PCR result-4H	PCR result-22H	Confirmation		Final result	Positive/Total
			OAA	Palcam	OAA	Palcam					OAA	Palcam		
4225	0	/	st	-	-	-	-	0/6	-	-	st	-	-	0/6
4226			st	-	-	-	-		-	-	st	-	-	
4227			st	-	-	-	-		-	-	st	-	-	
4228			st	-	-	-	-		-	-	st	-	-	
4229			st	-	-	-	-		-	-	st	-	-	
4230			st	-	-	-	-		-	-	st	-	-	
4231	1	0.4	st	-	-	-	-	1/6	-	-	st	-	-	1/6
4232			st	-	-	-	-		-	-	st	-	-	
4233			st	-	-	-	-		-	-	st	-	-	
4234			H+	+	/	/	+		+	+	H+	+	+	
4235			st	-	-	-	-		-	-	st	-	-	
4236			-	-	-	-	-		-	-	st	-	-	
4237	2	0.8	H+	+	/	/	+	5/6	+	+	H+	+	+	5/6
4238			H+	+	/	/	+		+	+	H+	+	+	
4239			st	-	-	-	-		-	-	st	-	-	
4240			H+	+	/	/	+		+	+	H+	+	+	
4241			H+	+	/	/	+		+	+	H+	+	+	
4242			H+	+	/	/	+		+	+	H+	+	+	
4243	3	1.6	H+	+	/	/	+	4/6	+	+	H+	+	+	4/6
4244			st	-	-	-	-		-	-	st	-	-	
4245			H+	+	/	/	+		+	+	H+	+	+	
4246			H+	+	/	/	+		+	+	H+	+	+	
4247			H+	+	/	/	+		+	+	H+	+	+	
4248			st	-	-	-	-		-	-	st	-	-	

♦ Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)



Sample N°	Level	Inoculation level (cfu/25g)	ISO 11290-1 [†] method					GDS <i>Listeria spp</i>							
			Half-fraser		Fraser		Listeria spp result	Positive/Total	PCR result-4H	PCR result-22H	Confirmation		Final result	Positive/Total	
			OAA	Palcam	OAA	Palcam					OAA	Palcam			
4249	4	3.2	H+	+	/	/	+	5/6	+	+	H+	+	+	5/6	
4250			H+	+	/	/	+		+	+	H+	+	+		
4251			H+	+	/	/	+		+	+	H+	+	+		
4252			H+	+	/	/	+		+	+	H+	+	+		
4253			st	-	-	-	-		-	-	-	st	-		-
4254			H+	+	/	/	+		+	+	H+	+	+		
4396	5	4.9	H+	+	H+	+	+	6/6	+	+	H+	+	+	6/6	
4397			H+	+	H+	+	+		+	+	H+	+	+		
4398			H+	+	H+	+	+		+	+	H+	+	+		
4399			H+	+	H+	+	+		+	+	H+	+	+		
4400			H+	+	H+	+	+		+	+	H+	+	+		
4401			H+	+	H+	+	+		+	+	H+	+	+		

Process water

Total viable count: 460 CFU/g
Listeria monocytogenes Ad631

Sample N°	Level	Inoculation level (cfu/25g)	ISO 11290-1 [♦] method					GDS <i>Listeria</i> spp.						
			Half-Fraser		Fraser		<i>Listeria</i> spp result	Positive/Total	PCR result-4H	PCR result-22H	Confirmation		Final result	Positive/Total
			OAA	Palcam	OAA	Palcam					OAA	Palcam		
5751	0	0	st	st	st	st	-	0/6	-	-	st	st	-	0/6
5752			st	st	st	st	-		-	-	st	st	-	
5753			st	st	st	st	-		-	-	st	st	-	
5754			st	st	st	st	-		-	-	st	st	-	
5755			st	st	st	st	-		-	-	st	st	-	
5756			st	st	st	st	-		-	-	st	st	-	
6595	1	0.2	st	st	st	st	-	1/6	-	-	st	st	-	1/6
6596			st	st	st	st	-		-	-	st	st	-	
6597			st	st	st	st	-		-	-	st	st	-	
6598			st	st	st	st	-		-	-	st	st	-	
6599			H+	+	/	/	+		+	+	H+	+	+	
6600			st	st	st	st	-		-	+	st	st	-	
6601	2	0.4	st	st	st	st	-	3/6	-	-	st	st	-	3/6
6602			H+	+	/	/	+		+	+	H+	+	+	
6603			H+	+	/	/	+		+	+	H+	+	+	
6604			H+	+	/	/	+		+	+	H+	+	+	
6605			st	st	st	st	-		-	-	st	st	-	
6606			st	st	st	st	-		-	-	st	st	-	
6607	3	0.7	st	st	st	st	-	1/6	-	-	st	st	-	1/6
6608			st	st	-	-	-		-	-	st	st	-	
6609			st	st	st	st	-		-	-	st	st	-	
6610			H+	+	/	/	+		+	+	H+	+	+	
6611			st	st	st	st	-		-	-	st	st	-	
6612			st	st	st	st	-		-	-	st	st	-	

♦ Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)



Sample N°	Level	Inoculation level (cfu/25g)	ISO 11290-1 [♦] method					GDS <i>Listeria spp.</i>						
			Half-Fraser		Fraser		<i>Listeria spp</i> result	Positive/Total	PCR result-4H	PCR result-22H	Confirmation		Final result	Positive/Total
			OAA	Palcam	OAA	Palcam					OAA	Palcam		
6613	4	1.4	H+	+	/	/	+	6/6	+	+	H+	+	+	6/6
6614			H+	+	/	/	+		+	+	H+	+	+	
6615			H+	+	/	/	+		+	+	H+	+	+	
6616			H+	+	/	/	+		+	+	H+	+	+	
6617			H+	+	/	/	+		+	+	H+	+	+	
6618			H+	+	/	/	+		+	+	H+	+	+	

Pre-Cut Bagged Spinach				
<i>Listeria seeligeri</i> QL031011.5				
Low Level: 0.27 CFU/25 g				
Sample #	Assurance GDS [®] <i>Listeria species</i> Tq			ISO 11290-1:2017 Result ¹
	PCR Presumptive Result		Confirmed	
	4 Hour	22 Hour	ISO 11290-1:2017 Result	
1	+	+	+	+
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	+	+	+	+
8	-	-	-	-
9	-	-	-	-
10	+	+	+	+
11	-	-	-	-
12	+	+	+	+
13	-	-	-	-
14	+	+	+	+
15	-	-	-	-
16	+	+	+	+
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-
Total	6/20	6/20	6/20	6/20
High Level: 3.9 CFU/25 g				
1	+	+	+	+
2	+	+	+	+
3	+	+	+	+
4	+	+	+	+
5	+	+	+	+
Total	5/5	5/5	5/5	5/5
Uninoculated				
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
Total	0/5	0/5	0/5	0/5

1. A paired analysis was conducted.
2. APC=1.2 x 10⁵ CFU/g

Appendix 7 - Inclusivity and exclusivity: raw data

20 *Listeria monocytogenes* strains: Half-Fraser as primary enrichment broth

INCLUSIVITY																
Strain		n°	Genetic group	Origin	Inoculation level	Inoculum + Half-Fraser broth (225mL)										
						GDS <i>Listeria</i> spp.						Reference method				
						Result		OAA	Palcam	Final result		Half Fraser		Fraser 1		
						4 h	22 h			4 h	22 h	OAA	Palcam	OAA	Palcam	
1	<i>Listeria monocytogenes</i>	1011/1410	II a	Frozen broccoli	57	-	+	+(3)	+(9)	-	+	st	+(1)	+	+	
2	<i>Listeria monocytogenes</i>	153	VI b	Soft cheese (Munster)	4	+	/	/	/	+	+	/	/	/	/	
3	<i>Listeria monocytogenes</i>	1973/2400	VI b	Egg and ham pastry (Quiche Lorraine)	3	+	/	/	/	+	+	/	/	/	/	
4	<i>Listeria monocytogenes</i>	38/181	II a	Toulouse sausages	17	+	/	/	/	+	+	/	/	/	/	
5	<i>Listeria monocytogenes</i>	7111/7516	IV b	Pâté (Rillettes)	8	+	/	/	/	+	+	/	/	/	/	
6	<i>Listeria monocytogenes</i>	913/1 048	IV b	Black pudding	2	+	/	/	/	+	+	/	/	/	/	
7	<i>Listeria monocytogenes</i>	A00C036	II a	Poultry (Guinea)	7	+	/	/	/	+	+	/	/	/	/	
8	<i>Listeria monocytogenes</i>	A00C041	La	Sausage	11	+	/	/	/	+	+	/	/	/	/	
9	<i>Listeria monocytogenes</i>	A00C044	II b	Poultry (Duck)	11	+	/	/	/	+	+	/	/	/	/	
10	<i>Listeria monocytogenes</i>	A00L097	II a	Milk	15	+	/	/	/	+	+	/	/	/	/	
11	<i>Listeria monocytogenes</i>	A00M009	II a	Smoked salmon	14	+	/	/	/	+	+	/	/	/	/	
12	<i>Listeria monocytogenes</i>	Ad253	II b	Semi hard cheese	74	-	+	+(10)	+(9)	-	+	+(1)	+(1)	+	+	
13	<i>Listeria monocytogenes</i>	Ad266	II a	Poultry	6	+	/	/	/	+	+	/	/	/	/	
14	<i>Listeria monocytogenes</i>	Ad270	IV b	Fermented sausage	4	+	/	/	/	+	+	/	/	/	/	
15	<i>Listeria monocytogenes</i>	Ad273	II b	Cured delicatessen	6	+	/	/	/	+	+	/	/	/	/	
16	<i>Listeria monocytogenes</i>	Ad274	II a	Ready-to-eat food (Asiatic food)	4	+	/	/	/	+	+	/	/	/	/	
17	<i>Listeria monocytogenes</i>	Ad534	II b	Fruits	10	+	/	/	/	+	+	/	/	/	/	
18	<i>Listeria monocytogenes</i>	Ad548	II a	Environment (Seafood)	14	+	/	/	/	+	+	/	/	/	/	
19	<i>Listeria monocytogenes</i>	Ad623	II b	Bread crumbs	12	+	/	/	/	+	+	/	/	/	/	
20	<i>Listeria monocytogenes</i>	Ad665	II a	Raw milk	3	+	/	/	/	+	+	/	/	/	/	

(x): number of colonies

2 *Listeria monocytogenes* strains: Half-Fraser + process water as primary enrichment broth

INCLUSIVITY																
Strain		n°	Genetic group	Origin	Inoculation level	Inoculum + Half-Fraser broth (225mL) + process water (25 mL)										
						GDS <i>Listeria</i> spp.						Reference method				
						Result		OAA	Palcam	Final result		Half Fraser		Fraser 1		
						4 h	22 h			4 h	22 h	OAA	Palcam	OAA	Palcam	
1	<i>Listeria monocytogenes</i>	1011/1410	II a	Frozen broccoli	57	+	+	+	+	+	+	+	+	/	/	
12	<i>Listeria monocytogenes</i>	Ad253	II b	Semi hard cheese	74	+	+	+	+	+	+	+	+	/	/	

2 Listeria monocytogenes strains: Half-Fraser + UHT milk as primary enrichment broth

INCLUSIVITY																
Strain			n°	Genetic group	Origin	Inoculation level	Inoculum + Half-Fraser broth (225mL) + UHT milk (25 mL)									
							GDS <i>Listeria</i> spp.						Reference method			
							Result		OAA	Palcam	Final result		Half Fraser		Fraser 1	
							4 h	22 h			4 h	22 h	OAA	Palcam	OAA	Palcam
1	Listeria	monocytogenes	1011/1410	II a	Frozen broccoli	57	+	+	+	+	+	+	+	+	/	/
12	Listeria	monocytogenes	Ad253	II b	Semi hard cheese	74	+	+	+	+	+	+	+	+	/	/

30 Listeria spp strains: Half-Fraser as primary enrichment broth

INCLUSIVITY																
Strain			n°	Origin	Inoculation level	Inoculum + Half-Fraser broth (225mL) + process water (25 mL)										
						GDS <i>Listeria</i> spp.						Reference method				
						Result		OAA	Palcam	Final result		Half Fraser		Fraser 1		
						4 h	22 h			4 h	22 h	OAA	Palcam	OAA	Palcam	
1	Listeria	grayi	ATCC19120	/	59	-	+	st	st	-	+	st	st	st	st	
2	Listeria	grayi	CIP76124	/	75	-	+	st	st	-	+	st	st	st	st	
3	Listeria	innocua	1	Smoked salmon	53	+	+	H-	+	+	+	+	+	/	/	
4	Listeria	innocua	Ad 658	Gorgonzola	61	+	+	+	+	+	+	+	+	/	/	
5	Listeria	innocua	Ad655	Brine	44	+	+	+	+	+	+	+	+	/	/	
6	Listeria	innocua	Ad660	Bread crumbs	76	+	+	+	+	+	+	+	+	/	/	
7	Listeria	innocua	Ad663	Environment (Dairy industry)	37	+	+	+	+	+	+	+	+	/	/	
8	Listeria	innocua	Ad671	Smoked bacon	39	+	+	+	+	+	+	+	+	/	/	
9	Listeria	innocua	Ad661	Soft cheese (Pont L'Evêque)	61	+	+	+	+	+	+	+	+	/	/	
10	Listeria	innocua	Ad659	Environment (Dairy industry)	83	+	+	+	+	+	+	+	+	/	/	
11	Listeria	ivanovii	Ad466	Raw veal meat	73	-	-	st	st	-	-	st	st	st	st	
12	Listeria	ivanovii	Ad662	Environment (Dairy industry)	51	+	-	+	+	+	-	+(2)	+(3)	+	+	
13	Listeria	ivanovii	BR11	Environment (Seafood)	27	-	-	+	+	-	-	+(8)	+(7)	+	+	
14	Listeria	ivanovii	CIP103505	/	60	+	+	+	+	+	+	+(6)	+(5)	+	+	
15	Listeria	ivanovii	Ad1289	Raw milk cheese	46	-	-	+(1)	+(1)	-	-	st	st	st	st	
16	Listeria	ivanovii	Ad1290	Milk powder	75	-	-	+(2)	+(1)	-	-	st	st	st	st	
17	Listeria	ivanovii	Ad1291	Poultry	36	-	-	+(1)	st	-	-	st	st	st	st	
18	Listeria	ivanovii	Ad1288	Sheep milk	93	-	+	+	+	-	+	+(3)	+(8)	/	/	
19	Listeria	seeligeri	Ad649	Cheese	49	+	+	+	+	+	+	+	+	/	/	

INCLUSIVITY															
Strain		n°	Origin	Inoculation level	Inoculum + Half-Fraser broth (225mL) + process water (25 mL)										
					GDS <i>Listeria</i> spp.						Reference method				
					Result		OAA	Palcam	Final result		Half Fraser		Fraser 1		
					4 h	22 h			4 h	22 h	OAA	Palcam	OAA	Palcam	
20	<i>Listeria seeligeri</i>	Ad651	Environment	49	+	+	+	+	+	+	+	+	+	/	/
21	<i>Listeria seeligeri</i>	Ad652	Environment (Dairy industry)	60	+	+	+	+	+	+	+	+	+	/	/
22	<i>Listeria seeligeri</i>	Ad674	Soft cheese (Munster)	39	+	+	+	+	+	+	+(6)	+(8)	/	/	
23	<i>Listeria seeligeri</i>	BR1	Trout	48	+	+	+	+	+	+	+	+	/	/	
24	<i>Listeria seeligeri</i>	BR18	Environment (Seafood)	43	-	+	+	+	-	+	st	+(6)	+	+	
25	<i>Listeria seeligeri</i>	CIP100100	/	20	-	-	st	st	-	-	st	st	st	st	
26	<i>Listeria welshimeri</i>	Ad1276	Environment (Slaughterhouse)	67	+	+	+	+	+	+	+(4)	+(5)	/	/	
27	<i>Listeria welshimeri</i>	Ad1235	Beef meat	70	+	+	+	+	+	+	+(6)	+(5)	/	/	
28	<i>Listeria welshimeri</i>	191424	Poultry	57	+	+	+	+	+	+	st	st	+	+	
29	<i>Listeria welshimeri</i>	Ad1175	Ready-to-eat food	54	+	+	+	+	+	+	+(3)	+(6)	/	/	
30	<i>Listeria welshimeri</i>	Ad650	Poultry	54	+	+	+	+	+	+	+(4)	+(1)	+	+	

(x): number of colonies

30 *Listeria* spp strains: Half-Fraser + process water as primary enrichment broth

INCLUSIVITY															
Strain		n°	Origin	Inoculation level	Inoculum + Half-Fraser broth (225mL) + process water (25 mL)										
					GDS <i>Listeria</i> spp.						Reference method				
					Result		OAA	Palcam	Final result		Half fraser		Fraser 1		
					4 h	22 h			4 h	22 h	OAA	Palcam	OAA	Palcam	
1	<i>Listeria grayi</i>	ATCC19120	/	59	-	-	st	st	-	-	st	st	st	st	
2	<i>Listeria grayi</i>	CIP76124	/	75	-	-	st	st	-	-	st	st	st	st	
3	<i>Listeria innocua</i>	1	Smoked salmon	53	+	+	+	+	+	+	+	+	/	/	
4	<i>Listeria innocua</i>	Ad 658	Gorgonzola	61	+	+	+	+	+	+	+	+	/	/	
5	<i>Listeria innocua</i>	Ad655	Brine	44	+	+	+	+	+	+	+	+	/	/	
6	<i>Listeria innocua</i>	Ad660	Bread crumbs	76	+	+	+	+	+	+	+	+	/	/	
7	<i>Listeria innocua</i>	Ad663	Environment (Dairy industry)	37	+	+	+	+	+	+	+	+	/	/	
8	<i>Listeria innocua</i>	Ad671	Smoked bacon	39	+	+	+	+	+	+	+	+	/	/	
9	<i>Listeria innocua</i>	Ad661	Soft cheese (Pont L'Evêque)	61	+	+	+	+	+	+	+	+	/	/	
10	<i>Listeria innocua</i>	Ad659	Environment (Dairy industry)	83	+	+	+	+	+	+	+	+	/	/	

INCLUSIVITY															
Strain		n°	Origin	Inoculation level	Inoculum + Half-Fraser broth (225mL) + process water (25 mL)										
					GDS <i>Listeria</i> spp.						Reference method				
					Result		OAA	Palcam	Final result		Half fraser		Fraser 1		
					4 h	22 h			4 h	22 h	OAA	Palcam	OAA	Palcam	
11	<i>Listeria ivanovii</i>	Ad466	Raw veal meat	73	+	+	+	+	+	+	+	+	+	/	/
12	<i>Listeria ivanovii</i>	Ad662	Environment (Dairy industry)	51	+	+	+	+	+	+	+	+	+	/	/
13	<i>Listeria ivanovii</i>	BR11	Environment (Seafood)	27	+	+	+	+	+	+	+	+	+	/	/
14	<i>Listeria ivanovii</i>	CIP103505	/	60	+	+	+	+	+	+	+	+	+	/	/
15	<i>Listeria ivanovii</i>	Ad1289	Raw milk cheese	46	+	+	+	+	+	+	+	+	+	/	/
16	<i>Listeria ivanovii</i>	Ad1290	Milk powder	75	-	+	+	+	-	+	+	+	+	/	/
17	<i>Listeria ivanovii</i>	Ad1291	Poultry	36	+	+	+	+	+	+	+	+	+	/	/
18	<i>Listeria ivanovii</i>	Ad1288	Sheep milk	93	+	+	+	+	+	+	+	+	+	/	/
19	<i>Listeria seeligeri</i>	Ad649	Cheese	49	+	+	+	+	+	+	+	+	+	/	/
20	<i>Listeria seeligeri</i>	Ad651	Environment	49	+	+	+	+	+	+	+	+	+	/	/
21	<i>Listeria seeligeri</i>	Ad652	Environment (Dairy industry)	60	+	+	+	+	+	+	+	+	+	/	/
22	<i>Listeria seeligeri</i>	Ad674	Soft cheese (Munster)	39	+	+	+	+	+	+	+	+	+	/	/
23	<i>Listeria seeligeri</i>	BR1	Trout	48	+	+	+	+	+	+	+	+	+	/	/
24	<i>Listeria seeligeri</i>	BR18	Environment (Fish)	43	+	+	+	+	+	+	+	+	+	/	/
25	<i>Listeria seeligeri</i>	CIP100100	/	20	-	+	st	st	-	+	st	st	st	st	st
26	<i>Listeria welshimeri</i>	Ad1276	Environment (Slaughterhouse)	67	+	+	+	+	+	+	+	+	+	/	/
27	<i>Listeria welshimeri</i>	Ad1235	Beef meat	70	+	+	+	+	+	+	+	+	+	/	/
28	<i>Listeria welshimeri</i>	191424	Poultry	57	+	+	+	+	+	+	+	+	+	/	/
29	<i>Listeria welshimeri</i>	Ad1175	Ready-to-eat-food	54	+	+	+	+	+	+	+	+	+	/	/
30	<i>Listeria welshimeri</i>	Ad650	Poultry	54	+	+	+	+	+	+	+	+	+	/	/

30 Listeria spp strains: Half-Fraser + UHT milk as primary enrichment broth

INCLUSIVITY															
Strain		n°	Origin	Inoculation level	Inoculum + Half-Fraser broth (225mL) + UHT milk (25 mL)										
					GDS <i>Listeria</i> spp.					Reference method					
					Result		OAA	Palcam	Final result		Half Fraser		Fraser 1		
					4 h	22 h			4 h	22 h	OAA	Palcam	OAA	Palcam	
1	<i>Listeria grayi</i>	ATCC19120	/	59	+	+	+(1)	st	+	+	st	st	st	st	
2	<i>Listeria grayi</i>	CIP76124	/	75	-	-	+(3)	st	-	-	st	st	st	st	
3	<i>Listeria innocua</i>	1	Smoked salmon	53	+	+	+	+	+	+	+	+	/	/	
4	<i>Listeria innocua</i>	Ad 658	Gorgonzola	61	+	+	+	+	+	+	+	+	/	/	
5	<i>Listeria innocua</i>	Ad655	Brine	44	+	+	+	+	+	+	+	+	/	/	
6	<i>Listeria innocua</i>	Ad660	Bread crumbs	76	+	+	+	+	+	+	+	+	/	/	
7	<i>Listeria innocua</i>	Ad663	Environment (Dairy industry)	37	+	+	+	+	+	+	+	+	/	/	
8	<i>Listeria innocua</i>	Ad671	Smoked bacon	39	+	+	+	+	+	+	+	+	/	/	
9	<i>Listeria innocua</i>	Ad661	Soft cheese (Pont L'Evêque)	61	+	+	+	+	+	+	+	+	/	/	
10	<i>Listeria innocua</i>	Ad659	Environment (Dairy industry)	83	+	+	+	+	+	+	+	+	/	/	
11	<i>Listeria ivanovii</i>	Ad466	Raw veal meat	73	+	+	+	+	+	+	+	+	/	/	
12	<i>Listeria ivanovii</i>	Ad662	Environment (Dairy industry)	51	+	+	+	+	+	+	+	+	/	/	
13	<i>Listeria ivanovii</i>	BR11	Environment (Seafood)	27	+	+	+	+	+	+	+	+	/	/	
14	<i>Listeria ivanovii</i>	CIP103505		60	+	+	+	+	+	+	+	+	/	/	
15	<i>Listeria ivanovii</i>	Ad1289	Raw milk cheese	46	+	+	+	+	+	+	+	+	/	/	
16	<i>Listeria ivanovii</i>	Ad1290	Milk powder	75	+	+	+	+	+	+	+	+	+	+	
17	<i>Listeria ivanovii</i>	Ad1291	Poultry	36	+	+	+	+	+	+	+	+	/	/	
18	<i>Listeria ivanovii</i>	Ad1288	Sheep milk	93	+	+	+	+	+	+	+	+	/	/	
19	<i>Listeria seeligeri</i>	Ad649	Cheese	49	+	+	+	+	+	+	+	+	/	/	
20	<i>Listeria seeligeri</i>	Ad651	Environment	49	+	+	+	+	+	+	+	+	/	/	
21	<i>Listeria seeligeri</i>	Ad652	Environment (Dairy industry)	60	+	+	+	+	+	+	+	+	/	/	
22	<i>Listeria seeligeri</i>	Ad674	Soft cheese (Munster)	39	+	+	+	+	+	+	+	+	/	/	
23	<i>Listeria seeligeri</i>	BR1	Trout	48	+	+	+	+	+	+	+	+	/	/	
24	<i>Listeria seeligeri</i>	BR18	Environment (Fish)	43	+	+	+	+	+	+	+	+	/	/	
25	<i>Listeria seeligeri</i>	CIP100100		20	-	+	st	st	-	+	st	st	st	st	
26	<i>Listeria welshimeri</i>	Ad1276	Environment (Slaughterhouse)	67	+	+	+	+	+	+	+	+	/	/	
27	<i>Listeria welshimeri</i>	Ad1235	Beef meat	70	+	+	+	+	+	+	+	+	/	/	
28	<i>Listeria welshimeri</i>	191424	Poultry	57	+	+	+	+	+	+	+	+	/	/	
29	<i>Listeria welshimeri</i>	Ad1175	Ready-to-eat-food	54	+	+	+	+	+	+	+	+	/	/	
30	<i>Listeria welshimeri</i>	Ad650	Poultry	54	+	+	+	+	+	+	+	+	/	/	

Inclusivity (renewal in 2026)

No.	Genus	Species	Sensu	Reference	Origin	Inoculation level (CFU/225mL)	Assurance® GDS for <i>Listeria</i> spp. Tq Pre-warmed (30°C) Half-Fraser broth 22 h at 30°C + 4h subculture		Assurance® GDS for <i>Listeria</i> spp. Tq Pre-warmed (30°C) Half-Fraser broth 22 h at 30°C + 22h subculture		Confirmation		
							PCR Assurance GDS <i>Listeria</i> spp Tq		PCR Assurance GDS <i>Listeria</i> spp Tq		Direct streaking		Fraser
							Target Cq	Result	Target Cq	Result	O&A	Palcam	O&A
1	<i>Listeria</i>	<i>grayi</i>	Lato	Ad2415	Rillette	17	17.14	+	5.94	+	st (x5)	st (x5)	st
2	<i>Listeria</i>	<i>grayi</i>	Lato	Ad1295	Spinach	20	21.92	+	5.91	+	st (x5)	st (x5)	st
3	<i>Listeria</i>	<i>rocourtiae</i>	Lato	DSM22097	Lettuce	15	22.07	+	14.05	+	H- (grainy aspect)	+	/
4	<i>Listeria</i>	<i>grayi</i>	Lato	Ad3288	Smoked bacon	41	19.97	+	6.19	+	- (x5)	- (x5)	st
5	<i>Listeria</i>	<i>grayi</i>	Lato	Ad3205	Chicken nuggets	40	25.06	+	7.55	+	st (x5)	st (x5)	st
6	<i>Listeria</i>	<i>fleischmanii</i>	Lato	DSM24998	Hard cheese	48	N/A/N/A/N/A	-/-	18.53	+	H-	-	/
						110 + UHT milk	N/A	-	6.35	+	H-	+	/
7	<i>Listeria</i>	<i>riparia</i>	Lato	DSM26685	Running water	10	23.79	+	12.55	+	H-	+	/
8	<i>Listeria</i>	<i>farberi</i>	Stricto	LMG31917	Soil	52	10.93	+	8.24	+	H-	+	/
9	<i>Listeria</i>	<i>immobilis</i>	Stricto	LMG31920	Soil	11	26.60	+	9.28	+	H-	+	/
10	<i>Listeria</i>	<i>marthii</i>	Stricto	DSM23813	Soil	63	7.20	+	8.29	+	H-	+	/
11	<i>Listeria</i>	<i>cornellensis</i>	Lato	DSM26689	Water	36	N/A/N/A	-/-	6.41	+	st (x5)	st (x5)	st
						12 + UHT milk	N/A	-	8.94	+	st	st	st
12	<i>Listeria</i>	<i>grandensis</i>	Lato	DSM26688	Water	30	N/A/N/A	-/-	18.2	+	st (x5)	st (x5)	st
						17 + UHT milk	N/A	-	N/A	-	st	st	st

Inclusivity (renewal in 2026) – additional investigation using UHT milk

No.	Genus	Species	Sensu	Reference	Origin	Inoculation level (CFU/225mL)	Assurance® GDS for <i>Listeria</i> spp. Tq Pre-warmed (30°C) Half-Fraser broth + UHT milk 22 h at 30°C + 4h subculture		Assurance® GDS for <i>Listeria</i> spp. Tq Pre-warmed (30°C) Half-Fraser broth + UHT milk 22 h at 30°C + 22h subculture		Assurance® GDS for <i>Listeria</i> spp. Tq Pre-warmed (30°C) Half-Fraser broth 22 h at 30°C		Confirmation
							PCR Assurance GDS <i>Listeria</i> spp Tq		PCR Assurance GDS <i>Listeria</i> spp Tq		Direct streaking		Fraser
							Target Cq	Result	Target Cq	Result	O&A	Palcam	O&A
1	<i>Listeria</i>	<i>grayi</i>	Lato	Ad2415	Rillette	98	6.08	+	6.21	+	White colonies	-	/
2	<i>Listeria</i>	<i>grayi</i>	Lato	Ad1295	Spinach	69	9.77	+	5.56	+	st	-	st
4	<i>Listeria</i>	<i>grayi</i>	Lato	Ad3288	Smoked bacon	66	12.52	+	17.01	+	st	-	st
5	<i>Listeria</i>	<i>grayi</i>	Lato	Ad3205	Chicken nuggets	31	11.21	+	15.08	+	st	st	st
6	<i>Listeria</i>	<i>fleischmanii</i>	Lato	DSM24998	Hard cheese	110	N/A	-	6.35	+	H-	+	/
11	<i>Listeria</i>	<i>cornellensis</i>	Lato	DSM26689	Water	12	N/A	-	8.94	+	st	st	st
12	<i>Listeria</i>	<i>grandensis</i>	Lato	DSM26688	Water	17	N/A	-	N/A	-	st	st	st

EXCLUSIVITY						
	Strain	Species	Reference	Origin	Inoculation level (cfu/ml)	PCR result
1	<i>Bacillus</i>	<i>cereus</i>	Ad 465	Salmon Terrine	4.0 10 ⁵	-
2	<i>Bacillus</i>	<i>circulans</i>	Ad 769	Vegetables	6.0 10 ⁵	-
3	<i>Bacillus</i>	<i>coagulans</i>	Ad 731	Dairy product	2.0 10 ⁵	-
4	<i>Bacillus</i>	<i>licheniformis</i>	Ad 978	Dairy product	1.0 10 ⁵	-
5	<i>Bacillus</i>	<i>mycoïdes</i>	Ad 762	Milk	8.0 10 ⁴	-
6	<i>Bacillus</i>	<i>pseudomycoïdes</i>	Ad 765	Vegetables	1.0 10 ⁵	-
7	<i>Bacillus</i>	<i>pumilus</i>	Ad 284	Ready-to-eat	8.0 10 ⁴	-
8	<i>Bacillus</i>	<i>weihenstephanensis</i>	Ad 726	Egg product	2.0 10 ⁵	-
9	<i>Brochothrix</i>	<i>thermosphacta</i>	EN 15129	Trout	6.2 10 ⁴	-
10	<i>Brochrotrix</i>	<i>compeßis</i>	CIP 1029205	Environment	3.0 10 ⁵	-
11	<i>Carnobacterium</i>	<i>diversgens</i>	CIP 101029 ^T		5.2 10 ⁵	-
12	<i>Carnobacterium</i>	<i>piscicola</i>	Ad 369	Raw milk	4.6 10 ⁵	-
13	<i>Corynebacterium</i>	<i>spp</i>	Ad 364	Soft cheese (Munster)	2.8 10 ⁵	-
14	<i>Enterococcus</i>	<i>durans</i>	Ad 149	Ham	6.0 10 ³	-
15	<i>Enterococcus</i>	<i>faecalis</i>	89L326	Soft cheese (Vacherin)	4.6 10 ⁴	-
16	<i>Lactobacillus</i>	<i>brevis</i>	86L126	Ham	2.0 10 ⁵	-
17	<i>Lactobacillus</i>	<i>curvatus</i>	Ad 380	Delicatessen	5.0 10 ⁴	-
18	<i>Lactobacillus</i>	<i>fermentum</i>	Ad 482	Tomatoes juice	2.5 10 ⁵	-
19	<i>Lactobacillus</i>	<i>sakei</i>	Ad 473	Ham	2.0 10 ⁵	-
20	<i>Lactococcus</i>	<i>lactis cremoris</i>	Ad 136	Dairy product	2.0 10 ⁵	-
21	<i>Leuconostoc</i>	<i>carosum</i>	Ad 411	Ham	7.4 10 ⁴	-
22	<i>Leuconostoc</i>	<i>citreum</i>	Ad 396	Ham	4.8 10 ⁴	-
23	<i>Micrococcus</i>	<i>luteus</i>	Ad 432	Cocktail	2.0 10 ⁵	-
24	<i>Pediococcus</i>	<i>pentosaceus</i>	ATCC 33316		1.0 10 ⁵	-
25	<i>Propionibacterium</i>	<i>freundenreichii</i>	CNRZ 725	Dairy product	4.0 10 ⁵	-
26	<i>Staphylococcus</i>	<i>aureus</i>	Ad 165	Smoked delicatessen	2.5 10 ⁵	-
27	<i>Staphylococcus</i>	<i>aureus</i>	Ad910	Poultry	8.0 10 ⁴	-
28	<i>Staphylococcus</i>	<i>aureus</i>	Ad902	Nems	2.0 10 ⁵	-
29	<i>Staphylococcus</i>	<i>epidermidis</i>	Ad 931	Fruits	7.5 10 ⁴	-
30	<i>Staphylococcus</i>	<i>haemoliticus</i>	Ad 989	Dairy product	2.0 10 ⁵	-
31	<i>Streptococcus</i>	<i>bovis</i>	91L518	Dairy product	1.2 10 ⁵	-
32	<i>Streptococcus</i>	<i>salivarius sps thermophilus</i>	Ad 441	Dairy product	4.0 10 ⁴	-

Appendix 8 - Inter-laboratory study: raw data

Collaborator A

Aerobic mesophilic flora: 4,4 10⁶ cfu/g

Sample N°	Reference method ISO 11290-1				Final result	Alternative method: GDS Listeria spp.				Agreement
	Fraser 1/2		Fraser 1			PCR GDS Listeria spp	OCLA	Palcam	Final result	
	OAA	Palcam	OAA	Palcam						
A3	-	-	-	-	-	-	-	-	-	NA
A5	-	-	-	-	-	-	-	-	-	NA
A9	-	-	-	-	-	-	-	-	-	NA
A13	-	-	-	-	-	-	-	-	-	NA
A14	-	-	-	-	-	-	-	-	-	NA
A18	-	-	-	-	-	-	-	-	-	NA
A22	-	-	-	-	-	-	-	-	-	NA
A23	-	-	-	-	-	-	-	-	-	NA
A2	+	+	+	+	+	+	+	+	+	PA
A7	+	+	+	+	+	+	+	+	+	PA
A8	+	+	+	+	+	+	+	+	+	PA
A11	+	+	+	+	+	+	+	+	+	PA
A15	+	+	+	+	+	+	+	+	+	PA
A17	+	+	+	+	+	+	+	+	+	PA
A21	+	+	+	+	+	+	+	+	+	PA
A24	+	+	-	-	+	+	+	+	+	PA
A1	+	+	+	+	+	+	+	+	+	PA
A4	+	+	+	+	+	+	+	+	+	PA
A6	+	+	+	+	+	+	+	+	+	PA
A10	+	+	+	+	+	+	+	+	+	PA
A12	+	+	+	+	+	+	+	+	+	PA
A16	+	+	+	+	+	+	+	+	+	PA
A19	+	+	+	+	+	+	+	+	+	PA
A20	+	+	+	+	+	+	+	+	+	PA

Collaborator B

Aerobic mesophilic flora: 5,0 10⁶ cfu/g

Sample N°	Reference method ISO 11290-1					Alternative method: GDS Listeria spp.				Agreement
	Fraser 1/2		Fraser 1		Final result	PCR GDS Listeria spp	OCLA	Palcam	Final result	
	OAA	Palcam	OAA	Palcam						
B3	-	-	-	-	-	-	-	-	-	NA
B5	-	-	-	-	-	-	-	-	-	NA
B9	-	-	-	-	-	-	-	-	-	NA
B13	-	-	-	-	-	-	-	-	-	NA
B14	-	-	-	-	-	-	-	-	-	NA
B18	-	-	-	-	-	-	-	-	-	NA
B22	-	-	-	-	-	-	-	-	-	NA
B23	-	-	-	-	-	-	-	-	-	NA
B2	+	+	+	+	+	+	+	+	+	PA
B7	+	+	+	+	+	+	+	+	+	PA
B8	-	-	-	-	-	-	-	-	-	NA
B11	+	+	+	+	+	+	+	+	+	PA
B15	+	+	+	+	+	+	+	+	+	PA
B17	+	+	+	+	+	+	+	+	+	PA
B21	+	+	+	+	+	+	+	+	+	PA
B24	+	+	+	+	+	+	+	+	+	PA
B1	+	+	+	+	+	+	+	+	+	PA
B4	+	+	+	+	+	+	+	+	+	PA
B6	+	+	+	+	+	+	+	+	+	PA
B10	+	+	+	+	+	+	+	+	+	PA
B12	+	+	+	+	+	+	+	+	+	PA
B16	+	+	+	+	+	+	+	+	+	PA
B19	+	+	+	+	+	+	+	+	+	PA
B20	+	+	+	+	+	+	+	+	+	PA

Collaborator C

Aerobic mesophilic flora: 1,7 10⁶ cfu/g

Sample N°	Reference method ISO 11290-1					Alternative method: GDS Listeria spp.				Agreement
	Fraser 1/2		Fraser 1		Final result	PCR GDS Listeria spp	OCLA	Palcam	Final result	
	OAA	Palcam	OAA	Palcam						
C3	-	-	-	-	-	-	/	/	-	NA
C5	-	-	-	-	-	-	/	/	-	NA
C9	-	-	-	-	-	-	/	/	-	NA
C13	-	-	-	-	-	-	/	/	-	NA
C14	-	-	-	-	-	-	/	/	-	NA
C18	-	-	-	-	-	-	/	/	-	NA
C22	-	-	-	-	-	-	/	/	-	NA
C23	-	-	-	-	-	-	/	/	-	NA
C2	+	+	+	+	+	+	+	+	+	PA
C7	+	+	+	+	+	+	+	+	+	PA
C8	+	+	+	+	+	+	+	+	+	PA
C11	+	+	+	+	+	+	+	+	+	PA
C15	+	+	+	+	+	+	+	+	+	PA
C17	+	+	+	+	+	+	+	+	+	PA
C21	+	+	+	+	+	+	+	+	+	PA
C24	+	+	+	+	+	+	+	+	+	PA
C1	+	+	+	+	+	+	+	+	+	PA
C4	+	+	+	+	+	+	+	+	+	PA
C6	+	+	+	+	+	+	+	+	+	PA
C10	+	+	+	+	+	+	+	+	+	PA
C12	+	+	+	+	+	+	+	+	+	PA
C16	+	+	+	+	+	+	+	+	+	PA
C19	+	+	+	+	+	+	+	+	+	PA
C20	+	+	+	+	+	+	+	+	+	PA

Collaborator D

Aerobic mesophilic flora: 5,6 10⁶ cfu/g

Sample N°	Reference method ISO 11290-1					Alternative method: GDS Listeria spp.				Agreement
	Fraser 1/2		Fraser 1		Final result	PCR GDS Listeria spp	OCLA	Palcam	Final result	
	OAA	Palcam	OAA	Palcam						
D3	-	-	-	-	-	-	/	/	-	NA
D5	-	-	-	-	-	-	/	/	-	NA
D9	-	-	-	-	-	-	/	/	-	NA
D13	-	-	-	-	-	-	/	/	-	NA
D14	-	-	-	-	-	-	/	/	-	NA
D18	-	-	-	-	-	-	/	/	-	NA
D22	-	-	-	-	-	-	/	/	-	NA
D23	-	-	-	-	-	-	/	/	-	NA
D2	-	-	-	-	-	-	/	/	-	NA
D7	-	-	-	-	-	-	/	/	-	NA
D8	+	+	+	+	+	+	+	+	+	PA
D11	+	+	+	+	+	+	+	+	+	PA
D15	+	+	+	+	+	+	+	+	+	PA
D17	+	+	+	+	+	+	+	+	+	PA
D21	+	+	+	+	+	+	+	+	+	PA
D24	+	+	+	+	+	+	+	+	+	PA
D1	+	+	+	+	+	+	+	+	+	PA
D4	+	+	+	+	+	+	+	+	+	PA
D6	+	+	+	+	+	+	+	+	+	PA
D10	+	+	+	+	+	+	+	+	+	PA
D12	+	+	+	+	+	+	+	+	+	PA
D16	+	+	+	+	+	+	+	+	+	PA
D19	+	+	+	+	+	+	+	+	+	PA
D20	+	+	+	+	+	+	+	+	+	PA

Collaborator E

Aerobic mesophilic flora: 3,4 10⁶ cfu/g

Sample N°	Reference method ISO 11290-1				Final result	Alternative method: GDS Listeria spp.				Agreement
	Fraser 1/2		Fraser 1			PCR GDS Listeria spp	OCLA	Palcam	Final result	
	OAA	Palcam	OAA	Palcam						
E3	-	-	-	-	-	/	/	-	NA	
E5	-	-	-	-	-	/	/	-	NA	
E9	-	-	-	-	-	/	/	-	NA	
E13	+ (L.monocytogenes)	+	+ (L.seeligeri)	+	-*	-	/	/	-	NA
E14	+ (L.seeligeri)	-	-	-	-*	-	/	/	-	NA
E18	-	-	-	-	-	-	/	/	-	NA
E22	+ (L.seeligeri)	-	+ (L.monocytogenes)	+	+	-	/	/	-	ND
E23	-	-		+ (L.monocytogenes)	+	-	/	/	-	ND
E2	+	+	+	+	+	+	+	+	+	PA
E7	+	+	+	+	+	+	+	+	+	PA
E8	+	+	+	+	+	+	+	+	+	PA
E11	+	+	+	+	+	+	+	+	+	PA
E15	+	+	+	+	+	-	+	+	-	ND _{FN(alt)}
E17	+	+	+	+	+	+	+	+	+	PA
E21	+	+	+	+	+	+	+	+	+	PA
E24	+	+	+	+	+	+	+	+	+	PA
E1	+	+	+	+	+	+	+	+	+	PA
E4	+	+	+	+	+	+	+	+	+	PA
E6	+	+	+	+	+	+	+	+	+	PA
E10	+	+	+	+	+	+	+	+	+	PA
E12	+	+	+	+	+	+	+	+	+	PA
E16	+	+	+	+	+	+	+	+	+	PA
E19	+	+	+	+	+	+	+	+	+	PA
E20	+	+	+	+	+	+	+	+	+	PA

*: confirmatory tests realised in ADRIA: negative

Collaborator F

Aerobic mesophilic flora: 4,2 10⁶ cfu/g

Sample N°	Reference method ISO 11290-1					Alternative method: GDS Listeria spp.				Agreement
	Fraser 1/2		Fraser 1		Final result	PCR GDS Listeria spp	OCLA	Palcam	Final result	
	OAA	Palcam	OAA	Palcam						
F3	+/- (L.seeligeri)	-	-	-	-*	-	/	/	-	NA
F5	+/- (L.welshimeri)	-	-	-	-*	-	/	/	-	NA
F9	-	-	-	-	-	-	/	/	-	NA
F13	-	-	-	-	-	-	/	/	-	NA
F14	+/- (L.welshimeri)	-	-	-	-*	-	/	/	-	NA
F18	+/- (L.seeligeri)	-	-	-	-*	-	/	/	-	NA
F22	-	-	-	-	-	-	/	/	-	NA
F23	+/- (L.welshimeri)	-	-	-	-*	-	/	/	-	NA
F2	+	+	+	+	+	+	+	+	+	PA
F7	+	+	+	+	+	+	+	+	+	PA
F8	+	+	+	+	+	+	+	+	+	PA
F11	+	+	+	+	+	+	+	+	+	PA
F15	+	+	+	+	+	+	+	+	+	PA
F17	+	+	+	+	+	+	+	+	+	PA
F21	+	+	+	+	+	+	+	+	+	PA
F24	+	+	+	+	+	+	+	+	+	PA
F1	+	+	+	+	+	+	+	+	+	PA
F4	+	+	+	+	+	+	+	+	+	PA
F6	+	+	+	+	+	+	+	+	+	PA
F10	+	+	+	+	+	+	+	+	+	PA
F12	+	+	+	+	+	+	+	+	+	PA
F16	+	+	+	+	+	+	+	+	+	PA
F19	+	+	+	+	+	+	+	+	+	PA
F20	+	+	+	+	+	+	+	+	+	PA

*: confirmatory tests realised in ADRIA: negative

Collaborator G

Aerobic mesophilic flora: 3,7 10⁶ cfu/g

Sample N°	Reference method ISO 11290-1					Alternative method: GDS Listeria spp.				Agreement
	Fraser 1/2		Fraser 1		Final result	PCR GDS Listeria spp	OCLA	Palcam	Final result	
	OAA	Palcam	OAA	Palcam						
G3	+/- (L.seeligeri)	-	-	-	-*	-	-	-	-	NA
G5	-	-	-	-	-	-	/	/	-	NA
G9	+/- (L.welshimeri)	-	-	-	-*	-	/	/	-	NA
G13	+/- (L.ivanovii)	-	-	-	-*	-	/	/	-	NA
G14	-	-	-	-	-	-	/	/	-	NA
G18	-	-	-	-	-	-	/	/	-	NA
G22	-	-	-	-	-	-	/	/	-	NA
G23	+/- (L.grayi)	-	-	-	-*	-	/	/	-	NA
G2	+	+	+	+	+	+	+	+	+	PA
G7	+	+	+	+	+	+	+	+	+	PA
G8	+	+	+	+	+	+	+	+	+	PA
G11	+	+	+	+	+	+	+	+	+	PA
G15	+	+	+	+	+	+	+	+	+	PA
G17	+	+	+	+	+	+	+	+	+	PA
G21	+	+	+	+	+	+	+	+	+	PA
G24	+	+	+	+	+	+	+	+	+	PA
G1	+	+	+	+	+	+	+	+	+	PA
G4	+	+	+	+	+	+	+	+	+	PA
G6	+	+	+	+	+	+	+	+	+	PA
G10	+	+	+	+	+	+	+	+	+	PA
G12	+	+	+	+	+	+	+	+	+	PA
G16	+	+	+	+	+	+	+	+	+	PA
G19	+	+	+	+	+	+	+	+	+	PA
G20	+	+	+	+	+	+	+	+	+	PA

*: confirmatory tests realised in ADRIA: negative

Collaborator H

Aerobic mesophilic flora: 3,3 10⁶ cfu/g

Sample N°	Reference method ISO 11290-1					Alternative method: GDS Listeria spp.				Agreement
	Fraser 1/2		Fraser 1		Final result	PCR GDS Listeria spp	OCLA	Palcam	Final result	
	OAA	Palcam	OAA	Palcam						
H3	-	-	-	-	-	-	/	/	-	NA
H5	-	-	-	-	-	-	/	/	-	NA
H9	-	-	-	-	-	-	/	/	-	NA
H13	-	-	-	-	-	-	/	/	-	NA
H14	-	-	-	-	-	-	/	/	-	NA
H18	-	-	-	-	-	-	/	/	-	NA
H22	-	-	-	-	-	-	/	/	-	NA
H23	-	-	-	-	-	-	/	/	-	NA
H2	+	+	+	+	+	+	+	+	+	PA
H7	+	+	+	+	+	+	+	+	+	PA
H8	+	+	+	+	+	+	+	+	+	PA
H11	+	+	+	+	+	+	+	+	+	PA
H15	+	+	+	+	+	+	+	+	+	PA
H17	+	+	+	+	+	+	+	+	+	PA
H21	-	-	-	-	-	-	/	/	-	NA
H24	+	+	+	+	+	+	+	+	+	PA
H1	+	+	+	+	+	+	+	+	+	PA
H4	+	+	+	+	+	+	+	+	+	PA
H6	+	+	+	+	+	+	+	+	+	PA
H10	+	+	+	+	+	+	+	+	+	PA
H12	+	+	+	+	+	+	+	+	+	PA
H16	+	+	+	+	+	+	+	+	+	PA
H19	+	+	+	+	+	+	+	+	+	PA
H20	+	+	+	+	+	+	+	+	+	PA

Collaborator I

Aerobic mesophilic flora: 2,6 10⁶ cfu/g

Sample N°	Reference method ISO 11290-1					Alternative method: GDS Listeria spp.				Agreement
	Fraser 1/2		Fraser 1		Final result	PCR GDS Listeria spp	OCLA	Palcam	Final result	
	OAA	Palcam	OAA	Palcam						
I3	-	-	-	-	-	-	/	/	-	NA
I5	-	-	-	-	-	-	/	/	-	NA
I9	-	-	-	-	-	-	/	/	-	NA
I13	-	-	-	-	-	-	/	/	-	NA
I14	-	-	-	-	-	-	/	/	-	NA
I18	-	-	-	-	-	-	/	/	-	NA
I22	-	-	-	-	-	-	/	/	-	NA
I23	-	-	-	-	-	-	/	/	-	NA
I2	+	+	+	+	+	+	+	+	+	PA
I7	-	-	+	+	+	+	+	+	+	PA
I8	+	+	+	+	+	+	+	+	+	PA
I11	-	-	+	+	+	+	+	+	+	PA
I15	-	-	-	-	-	-	/	/	-	NA
I17	+	+	+	+	+	+	+	+	+	PA
I21	+	+	+	+	+	+	+	+	+	PA
I24	+	+	+	+	+	+	+	+	+	PA
I1	+	+	+	+	+	+	+	+	+	PA
I4	+	+	+	+	+	+	+	+	+	PA
I6	+	+	+	+	+	+	+	+	+	PA
I10	+	+	+	+	+	+	+	+	+	PA
I12	+	+	+	+	+	+	+	+	+	PA
I16	+	+	+	+	+	+	+	+	+	PA
I19	+	+	+	+	+	+	+	+	+	PA
I20	+	+	+	+	+	+	+	+	+	PA

Collaborator J

Aerobic mesophilic flora: 5,9 10⁶ cfu/g

Sample N°	Reference method ISO 11290-1					Alternative method: GDS Listeria spp.				Agreement
	Fraser 1/2		Fraser 1		Final result	PCR GDS Listeria spp	OCLA	Palcam	Final result	
	OAA	Palcam	OAA	Palcam						
J3	-	-	-	-	-	-	-	-	-	NA
J5	-	-	-	-	-	-	-	-	-	NA
J9	-	-	-	-	-	-	-	-	-	NA
J13	-	-	-	-	-	-	-	-	-	NA
J14	-	-	-	-	-	-	-	-	-	NA
J18	-	-	-	-	-	-	-	-	-	NA
J22	-	-	-	-	-	-	-	-	-	NA
J23	-	-	-	-	-	-	-	-	-	NA
J2	+	+	+	+	+	+	+	+	+	PA
J7	+	+	+	+	+	+	+	+	+	PA
J8	+	+	+	+	+	+	+	+	+	PA
J11	+	+	+	+	+	+	+	+	+	PA
J15	+	+	+	+	+	+	+	+	+	PA
J17	+	+	+	+	+	+	+	+	+	PA
J21	+	+	+	+	+	+	+	+	+	PA
J24	+	+	+	+	+	+	+	+	+	PA
J1	+	+	+	+	+	+	+	+	+	PA
J4	+	+	+	+	+	+	+	+	+	PA
J6	+	+	+	+	+	+	+	+	+	PA
J10	+	+	+	+	+	+	+	+	+	PA
J12	+	+	+	+	+	+	+	+	+	PA
J16	+	+	+	+	+	+	+	+	+	PA
J19	+	+	+	+	+	+	+	+	+	PA
J20	+	+	+	+	+	+	+	+	+	PA

Collaborator K

Aerobic mesophilic flora: 6,0 10⁶ cfu/g

Sample N°	Reference method ISO 11290-1					Alternative method: GDS Listeria spp.				Agreement
	Fraser 1/2		Fraser 1		Final result	PCR GDS Listeria spp	OCLA	Palcam	Final result	
	OAA	Palcam	OAA	Palcam						
K3	-	-	-	-	-	-	-	-	-	NA
K5	-	-	-	-	-	-	-	-	-	NA
K9	-	-	-	-	-	-	-	-	-	NA
K13	-	-	-	-	-	-	-	-	-	NA
K14	-	-	-	-	-	-	-	-	-	NA
K18	-	-	-	-	-	-	-	-	-	NA
K22	-	-	-	-	-	-	-	-	-	NA
K23	-	-	-	-	-	-	-	-	-	NA
K2	+	+	+	+	+	+	+	+	+	PA
K7	+	+	+	+	+	+	+	+	+	PA
K8	+	+	+	+	+	+	+	+	+	PA
K11	+	+	+	+	+	+	+	+	+	PA
K15	+	+	+	+	+	+	+	+	+	PA
K17	+	+	+	+	+	+	+	+	+	PA
K21	+	+	+	+	+	+	+	+	+	PA
K24	+	+	+	+	+	+	+	+	+	PA
K1	+	+	+	+	+	+	+	+	+	PA
K4	+	+	+	+	+	+	+	+	+	PA
K6	+	+	+	+	+	+	+	+	+	PA
K10	+	+	+	+	+	+	+	+	+	PA
K12	+	+	+	+	+	+	+	+	+	PA
K16	+	+	+	+	+	+	+	+	+	PA
K19	+	+	+	+	+	+	+	+	+	PA
K20	+	+	+	+	+	+	+	+	+	PA

Collaborator L

Aerobic mesophilic flora: 5,6 10⁶ cfu/g

Sample N°	Reference method ISO 11290-1					Alternative method: GDS Listeria spp.				Agreement
	Fraser 1/2		Fraser 1		Final result	PCR GDS Listeria spp	OCLA	Palcam	Final result	
	OAA	Palcam	OAA	Palcam						
L3	-	-	-	-	-	-	/	/	-	NA
L5	-	-	-	-	-	-	/	/	-	NA
L9	-	-	-	-	-	-	/	/	-	NA
L13	-	-	-	-	-	-	/	/	-	NA
L14	-	-	-	-	-	-	/	/	-	NA
L18	-	-	-	-	-	-	/	/	-	NA
L22	-	-	-	-	-	-	/	/	-	NA
L23	-	-	-	-	-	-	/	/	-	NA
L2	-	-	-	-	-	-	/	/	-	NA
L7	+	+	+	+	+	+	+	+	+	PA
L8	+	+	+	+	+	+	+	+	+	PA
L11	+	+	+	+	+	+	+	+	+	PA
L15	+	+	+	+	+	+	+	+	+	PA
L17	+	+	+	+	+	+	+	+	+	PA
L21	-	-	-	-	-	-	/	/	-	NA
L24	+	+	+	+	+	+	+	+	+	PA
L1	+	+	+	+	+	+	+	+	+	PA
L4	+	+	+	+	+	+	+	+	+	PA
L6	+	+	+	+	+	+	+	+	+	PA
L10	+	+	+	+	+	+	+	+	+	PA
L12	+	+	+	+	+	+	+	+	+	PA
L16	+	+	+	+	+	+	+	+	+	PA
L19	+	+	+	+	+	+	+	+	+	PA
L20	+	+	+	+	+	+	+	+	+	PA

Collaborator M

Aerobic mesophilic flora: 4,0 10⁶ cfu/g

Sample N°	Reference method ISO 11290-1					Alternative method: GDS Listeria spp.				Agreement
	Fraser 1/2		Fraser 1		Final result	PCR GDS Listeria spp	OCLA	Palcam	Final result	
	OAA	Palcam	OAA	Palcam						
M3	-	-	-	-	-	-	/	/	-	NA
M5	-	-	-	-	-	-	/	/	-	NA
M9	-	-	-	-	-	-	/	/	-	NA
M13	-	-	-	-	-	-	/	/	-	NA
M14	-	-	-	-	-	-	/	/	-	NA
M18	-	-	-	-	-	-	/	/	-	NA
M22	-	-	-	-	-	-	/	/	-	NA
M23	-	-	-	-	-	-	/	/	-	NA
M2	-	-	-	-	-	-	/	/	-	NA
M7	-	-	-	-	-	-	/	/	-	NA
M8	+	+	+	+	+	+	+	+	+	PA
M11	-	-	-	-	-	-	/	/	-	NA
M15	-	-	+	+	+	+	+	+	+	PA
M17	+	+	+	+	+	+	+	+	+	PA
M21	-	-	-	-	-	+	/	-	-	PD _{FP(alt)}
M24	+	+	+	+	+	+	+	+	+	PA
M1	+	+	+	+	+	+	+	+	+	PA
M4	+	+	+	+	+	+	+	+	+	PA
M6	+	+	+	+	+	+	+	+	+	PA
M10	-	-	+	+	+	+	+	+	+	PA
M12	+	+	+	+	+	+	+	+	+	PA
M16	+	+	+	+	+	+	+	+	+	PA
M19	+	+	+	+	+	+	+	+	+	PA
M20	+	+	+	+	+	+	+	+	+	PA

Collaborator N

Aerobic mesophilic flora: 3,6 10⁶ cfu/g

Sample N°	Reference method ISO 11290-1					Alternative method: GDS Listeria spp.				Agreement
	Fraser 1/2		Fraser 1		Final result	PCR GDS Listeria spp	OCLA	Palcam	Final result	
	OAA	Palcam	OAA	Palcam						
N3	-	-	-	-	-	-	/	/	-	NA
N5	-	-	-	-	-	-	/	/	-	NA
N9	-	-	-	-	-	-	/	/	-	NA
N13	-	-	-	-	-	-	/	/	-	NA
N14	-	-	-	-	-	-	/	/	-	NA
N18	-	-	-	-	-	-	/	/	-	NA
N22	-	-	-	-	-	-	/	/	-	NA
N23	-	-	-	-	-	-	/	/	-	NA
N2	+	+	+	+	+	+	+	+	+	PA
N7	+	+	+	+	+	+	+	+	+	PA
N8	-	-	-	-	-	+	+	+	+	PD
N11	+	+	+	+	+	+	+	+	+	PA
N15	+	+	+	+	+	+	+	+	+	PA
N17	+	d	+	+	+	+	+	+	+	PA
N21	+	+	+	+	+	+	+	+	+	PA
N24	+	+	+	+	+	-	+	+	-	ND _{FN(alt)}
N1	+	+	+	+	+	+	+	+	+	PA
N4	+	+	+	+	+	+	+	+	+	PA
N6	+	+	+	+	+	+	+	+	+	PA
N10	+	+	+	+	+	+	+	+	+	PA
N12	+	+	+	+	+	+	+	+	+	PA
N16	+	+	+	+	+	+	+	+	+	PA
N19	+	+	+	+	+	+	+	+	+	PA
N20	+	+	+	+	+	+	+	+	+	PA

d: doubtful colonies

Collaborator O (ADRIA)

Aerobic mesophilic flora: 2.9×10^6 cfu/g

Sample N°	Reference method ISO 11290-1♦				Final result	Alternative method: GDS Listeria spp.				Agreement
	Fraser 1/2		Fraser 1			PCR GDS Listeria spp	OCLA	Palcam	Final result	
	OAA	Palcam	OAA	Palcam						
O3	-	-	-	-	-	-	-	-	NA	
O5	-	-	-	-	-	-	-	-	NA	
O9	-	-	-	-	-	-	-	-	NA	
O13	-	-	-	-	-	-	-	-	NA	
O14	-	-	-	-	-	-	-	-	NA	
O18	-	-	-	-	-	-	-	-	NA	
O22	-	-	-	-	-	-	-	-	NA	
O23	-	-	-	-	-	-	-	-	NA	
O2	+	+	+	+	+	+	+	+	PA	
O7	+	+	+	+	+	+	+	+	PA	
O8	+	+	+	+	+	+	+	+	PA	
O11	+	+	+	+	+	+	+	+	PA	
O15	+	+	+	+	+	+	+	+	PA	
O17	+	+	+	+	+	+	+	+	PA	
O21	-	-	-	-	-	-	-	-	NA	
O24	+	+	+	+	+	+	+	+	PA	
O1	+	+	+	+	+	+	+	+	PA	
O4	+	+	+	+	+	+	+	+	PA	
O6	+	+	+	+	+	+	+	+	PA	
O10	+	+	+	+	+	+	+	+	PA	
O12	+	+	+	+	+	+	+	+	PA	
O16	+	+	+	+	+	+	+	+	PA	
O19	+	+	+	+	+	+	+	+	PA	
O20	+	+	+	+	+	+	+	+	PA	

♦ Analyses performed according to the COFRAC accreditation (Accreditation Testing n°1-0144, scope available on www.cofrac.fr)