

NF VALIDATION
Validation of alternative analytical methods
Application in food microbiology

Summary Report

Initial validation study

Validation study according to the NF EN ISO 16140-2:2016

mericon[®] Manual *Listeria monocytogenes*
(Certificate number: QIA 36/02 - 05/17)
for the detection of *Listeria monocytogenes*
in meat and dairy products

Qualitative method

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This report consists of 67 pages, including 5 appendices.
Only copies including the totality of this report are authorised.

Competencies of the laboratory are certified by COFRAC accreditation for the analyses marked with the symbol♦.

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1	INTRODUCTION	5
2	METHOD PROTOCOLS	5
2.1	Alternative method	5
2.1.1	Principle	5
2.1.2	Protocol	5
2.1.3	Restrictions	5
2.2	Reference method	6
2.3	Study design	6
3	METHOD COMPARISON STUDY	6
3.1	Sensitivity study	6
3.1.1	Number and nature of samples	6
3.1.2	Artificial contamination of samples	7
3.1.3	Confirmation protocols	7
3.1.4	Test results	8
3.1.5	Calculation of relative accuracy (AC), relative sensitivity (SE) and false positive ratio (FP)	9
3.1.6	Analysis of discordants	10
3.1.7	Enrichment storage for 72 h at 2 - 8°C	12
3.1.8	Confirmations	12
3.1.9	PCR inhibitions	12
3.2	Relative level of detection (RLOD)	13
3.3	Inclusivity / exclusivity	14
3.3.1	Test protocols	14
3.3.2	Results	14
3.4	Practicability	15
4	INTER-LABORATORY STUDY	18
4.1	Study organisation	18
4.2	Experimental parameters controls	19
4.2.1	Strain stability and background microflora stability	19
4.2.2	Contamination levels	20
4.2.3	Logistic conditions	21
4.3	Results analysis	21
4.3.1	Expert laboratory results	22
4.3.2	Results observed by the collaborative laboratories	22

4.3.3	Results of the collaborators retained for interpretation	24
4.4	Calculation and interpretation	25
4.4.1	Calculation of the specificity percentage (SP)	25
4.4.2	Calculation of the sensitivity (SE_{alt}), the sensitivity for the reference method (SE_{ref}), the relative trueness (RT) and the false positive ratio for the alternative method (FPR)	25
4.4.3	Interpretation of data	26
4.4.4	Evaluation of the RLOD between laboratories	29
5	CONCLUSION	29
Appendix 1 – Flow diagram of the alternative method mericon® Manual <i>Listeria monocytogenes</i> Detection		31
Appendix 2 – Flow diagram of the reference method: ISO 11290-1/A1: Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of <i>Listeria monocytogenes</i>		32
Appendix 3 – Artificial contamination of the samples		33
Appendix 4 – Sensitivity study: raw data		34
Appendix 5 – Relative level of detection (RLOD): raw data		47
Appendix 6 – Inclusivity / exclusivity: raw data		49
Appendix 7 - Results obtained by the collaborative laboratories and the expert laboratory		54

Quality Assurance documents related to this study can be consulted upon request from **QIAGEN**.

The technical protocol and the result interpretation were realised according to the EN ISO 16140-2:2016 and the AFNOR technical rules (revision 5).

Validation protocols	NF EN ISO 16140-2 (June 2016) : Microbiology of the food chain - Method validation <i>Part 1: Vocabulary</i> <i>Part 2: Protocol for the validation of alternative (proprietary) methods against a reference method</i> AFNOR Technical Rules (Revision n° 5)
Reference methods[♦]	ISO 11290-1 (February 1997) : Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of <i>Listeria monocytogenes</i> <i>Part 1: Detection Method</i> ISO 11290-1/A1 (February 2005)
Alternative method	<i>mericon</i>[®] Manual <i>Listeria monocytogenes</i> Detection
Scope	Meat and dairy products
Certification organism	AFNOR Certification (http://nf-validation.afnor.org/)

[♦] Analyses performed according to the COFRAC accreditation

1 INTRODUCTION

The **mericon**[®] **Manual *Listeria monocytogenes*** method was validated in May 2017 with the certificate number QIA 36/02 - 05/17 for the detection of *Listeria monocytogenes* in meat and dairy products according to the EN ISO 16140-2:2016.

2 METHOD PROTOCOLS

2.1 Alternative method

2.1.1 Principle

The **mericon**[®] *Listeria monocytogenes* method is based on the real time PCR principle.

2.1.2 Protocol

The protocol is the following:

- Enrichment in the **supplemented** Oxoid Novel Enrichment (ONE) *Listeria* for 24h ± 2 h at 30 ± 1°C;
- DNA extraction according to a **manual protocol**;
- Real time PCR in the Rotor-Gene instrument;
- The interpretation was done using the software version 2.3.1.49;
- Confirmation by streaking 100µL of the enrichment broth on an Ottaviani and Agosti formulation agar.

In order to improve the practicability of the method, it is possible to store the enrichment for 72 h at 2-8°C prior to analysis.

The flow diagram of the alternative method is provided in **Appendix 1**.

2.1.3 Restrictions

There is no restriction.

2.2 Reference method♦

The reference method corresponds to the ISO 11290-1 (February 1997) standard: Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of *Listeria monocytogenes* – Part 1: detection method (See **Appendix 2**).

2.3 Study design

The study is **an unpaired study design** as the reference and the alternative methods have different enrichment procedures.

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.

3.1.1 Number and nature of samples

144 samples were analysed. The distribution per tested category and type is given in Table 1.

Table 1 – Distribution per tested category and type of the samples used in the interpretation

Categories	Types	Positive samples	Negative samples	Total
Meat products	Raw meats	16	7	23
	Raw and cooked delicatessen	9	16	25
	Ready to cook and ready to reheat foods	12	12	24
	<i>Total</i>	37	35	72
Dairy products	Raw milks and fermented milks	13	16	29
	Cheeses (raw and pasteurised)	10	13	23
	Desserts and ice-creams	9	11	20
	<i>Total</i>	32	40	72
TOTAL		69	75	144

Note: the sample 702 was removed from the interpretation as inhibitions were observed whatever the dilution of the DNA extract.

3.1.2 Artificial contamination of samples

28 samples were artificially contaminated by cross contamination spiking, or seeding protocols. When contaminations were done by spiking, the strains were stressed using various injury protocols. 12 different strains and 4 injury protocols were used. 15 samples gave a positive result. All the inoculations were lower than 5 CFU/sample for the spiking protocol and lower than 3 CFU/sample for the seeding protocol. No more than 6 positive results were obtained with a same strain.

The injury efficiency was evaluated by comparing enumeration results onto selective and non selective agars (respectively O&A and TSYEA). The artificial contaminations are presented in **Appendix 3**.

79.4 % of the samples were naturally contaminated.

3.1.3 Confirmation protocols

The positive PCR results were confirmed by streaking 100 µl of enrichment broth onto O&A plates.

3.1.4 Test results

Raw data per category are given in **Appendix 4**, as well as the repartition of the data based on the decision tree. A summary of results obtained with the reference and the alternative method is given in the following tables.

Table 2 – Summary of results obtained with the reference and the alternative method: Overall results

	Response	Reference method positive (R+)	Reference method negative (R-)
Manual DNA extract	Alternative method positive (A+)	Positive agreement (A+/R+) PA = 43	Positive deviation (R-/A+) PD = 13
	Alternative method negative (A-)	Negative deviation (A-/R+) ND = 13	Negative agreement (A-/R-) NA = 75

PP: positive presumptive non confirmed samples

PD = positive deviation (R-/A+)

ND = negative deviation (A-/R+)

Results per category of samples

Table 3 – Summary of results obtained with the reference and the alternative method: Meat products

	Response	Reference method positive (R+)	Reference method negative (R-)
Manual DNA extract	Alternative method positive (A+)	Positive agreement (A+/R+) PA = 21	Positive deviation (R-/A+) PD = 8
	Alternative method negative (A-)	Negative deviation (A-/R+) ND = 8	Negative agreement (A-/R-) NA = 35

Table 4 – Summary of results obtained with the reference and the alternative method: Dairy products

	Response	Reference method positive (R+)	Reference method negative (R-)
Manual DNA extract	Alternative method positive (A+)	Positive agreement (A+/R+) PA = 22	Positive deviation (R-/A+) PD = 5
	Alternative method negative (A-)	Negative deviation (A-/R+) ND = 5	Negative agreement (A-/R-) NA = 40

3.1.5 Calculation of relative trueness (RT), relative sensitivity (SE) and false positive ratio (FPR)

The calculations are presented in Table 5.

Table 5 – Calculation of relative trueness (RT), relative sensitivity (SE) and false positive ratio (FPR)

Category		Type		PA	NA	PD	ND	PPND	PPNA	SE _{alt} %	SE _{ref} %	RT %	FPR %
1	Meat products	a	Raw meats	10	7	4	2	0	0	87.5	75.0	73.9	0.0
		b	Raw and cooked delicatessen	4	16	3	2	0	0	77.8	66.7	80.0	0.0
		c	Ready-to-eat, Ready to reheat	7	12	1	4	0	0	66.7	91.7	79.2	0.0
		Total		21	35	8	8	0	0	78,4	78.4	77.8	0.0
2	Dairy products	a	Raw milks and fermented milks	9	16	2	2	0	0	84.6	84.6	86.2	0.0
		b	Cheeses (raw and pasteurized)	9	13	0	1	0	0	90.0	100.0	95.7	0.0
		c	Desserts and ice creams	4	11	3	2	0	0	77.8	66.7	75.0	0.0
		Total		22	40	5	5	0	0	84.4	84.4	86.1	0.0
All categories				43	75	13	13	0	0	81.2	81.2	81.9	0.0

The following results are observed:

Table 6 - Summary of results

Sensitivity for the alternative method	$SE_{alt} = \frac{(PA + PD)}{(PA + ND + PD)} \times 100\%$	81.2 %
Sensitivity for the reference method	$SE_{ref} = \frac{(PA + ND + PD)}{(PA + ND + PD)} \times 100\%$	81.2 %
Relative trueness	$RT = \frac{(PA + NA)}{N} \times 100\%$	81.9 %
False positive ratio for the alternative method FP = PPNA + PPND	$FPR = \frac{(FP)}{NA} \times 100\%$	0.0 %

With $ND = ND + PPND$
 $NA = NA + PPNA$

3.1.6 Analysis of discordant results

13 negative deviations (Table 7) and 13 positive deviations (Table 8) are observed on 69 positive samples, confirming that low contamination levels were used, fulfilling the challenging conditions of a validation study.

 Negative deviations: 13

Table 7 - Negative deviations

Category	Sample N°	Product	Result	Confirmatory test	Contamination
Meat products	3229	Cooked chicken	-	-	Natural
	3235	Cooked sausage	-	-	Natural
	3470	Raw turkey meat	-	-	Natural
	3475	Duck pâté	-	-	Natural
	3480	Frozen RTRH meal (turkey)	-	+	Natural
	3567	Turkey meat	-	-	Natural
	554	RTRH turkey	-	+	Natural
	555	RTC (pork with honey)	-	-	Natural
Dairy products	3242	Raw milk cheese	-	-	Natural
	563	Dessert	-	-	Natural
	813	Dessert	-	-	Artificial <i>L. monocytogenes</i> Ad 249
	1670	Raw milk	-	-	Artificial <i>L. monocytogenes</i> Ad 1781
	1674	Fermented milk	-	-	Artificial <i>L. monocytogenes</i> Ad 629

Among the 13 negative deviations, the presence of *Listeria monocytogenes* was detected in the enrichment broth for two samples 3480 and 554. For the other 11 samples, the negative results were probably due to sampling heterogeneity in this unpaired data study when dealing with low contamination levels.

 Positive deviations: 13

Table 8 - Positive deviations

Category	Sample N°	Product	Contamination
Meat products	3225	Raw pork meat	Natural
	3236	Sausage	Natural
	558	Delicatessen	Natural
	687	Turkey	Natural
	816	Frozen raw chicken	Natural
	818	Ground chicken	Natural
	821	Delicatessen	Natural
	824	RTRH	Natural
Dairy products	3492	Pasteurised half skimmed milk	Artificial <i>L. monocytogenes</i> Ad 1201
	3493	Pasteurised milk	Artificial <i>L. monocytogenes</i> Ad 611
	812	Dessert	Artificial <i>L. monocytogenes</i> Ad 523
	1471	Raw milk	Artificial <i>L. monocytogenes</i> Ad 1781
	1676	Raw milk	Artificial <i>L. monocytogenes</i> Ad 610

When the protocol of the reference method was used on the enrichment broth of the alternative method (subculture in Fraser and streaking on selective agar plate), the presence of *Listeria monocytogenes* was detected for three samples (553, 565 and 689).

The analysis of discordant results according to the ISO 16140-2:2016 is the following:

Category		Type		PD	ND+PPND	ND-PD	AL
1	Meat products	a	Raw meats	4	2	-2	
		b	Raw and cooked delicatessen	3	2	-1	
		c	Ready-to-eat, Ready to reheat	1	4	3	
		Total		8	8	0	+3
2	Dairy products	a	Raw milks and fermented milks	2	2	0	
		b	Cheeses (raw and pasteurized)	0	1	1	
		c	Desserts and ice creams	3	2	-1	
		Total		5	5	0	+3
All categories				13	13	0	+4

The observed values for ND-PD are below the acceptability limit for each category and for all the categories, and fulfil thus the ISO 16140-2 requirements.

3.1.7 *Enrichment storage for 72 h at 5°C ± 3°C*

Three changes were observed:

- Sample 3475: ND → PA
- Sample 3480: ND → PA
- Sample 554: ND → PA

$$\text{ND} - \text{PD} = 10 - 13 = -3$$

The observed value is below the acceptability limit, and fulfils thus the ISO 16140-2:2016 requirements.

3.1.8 *Confirmations*

All the positive PCR results were confirmed by streaking 100 µl of the enrichment broth onto O&A plates.

3.1.9 *PCR inhibitions*

20.7 % of the samples showed PCR inhibitions. The repartition is based on the decision tree. Dilutions of the DNA extracts are this required to allow PCR runs. 1/10, 1/50 or 1/100 dilutions were indeed used, as shown Table 9.

Table 9 - inhibitions and percentage of inhibition

Dilution applied	Meat products		Dairy products	
	Number of samples	% of samples	Number of samples	% of samples
1/10	11	15.3 %	7	10.4 %
1/50	2	2.8 %	3	4.5 %
1/100	2	2.8 %	5	7.5 %
Total	15	20.8 %	15	22.4 %

Note: the sample 702 (raw milk cheese) was removed from the data interpretation as an inhibition was still observed with 1/100 dilution of the DNA extracts.

3.2 Relative level of detection (RLOD)

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:

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

The RLOD calculations were performed using Excel spreadsheet of the international standard (ISO 16140), as described in the ISO 16140-2:2016 (<http://standards.iso.org/ISO/16140>). The RLOD are given table 10. The raw data are given in **Appendix 5**.

Table 10 – Presentation of RLOD before and after confirmation of the alternative method results

Name	RLOD	RLODL	RLODU	b=ln (RLOD)	sd(b)	z-Test statistic	p-value
Rillettes / <i>Listeria monocytogenes</i> Ad268	1.0	0.4	2.3	0.0	0.4	0.0	1.0
Raw milk / <i>Listeria monocytogenes</i> 153	1.3	0.6	2.6	0.2	0.4	0.6	0.6

The RLOD are below the AL fixed at 2.5 for an unpaired study for the two tested matrix/strain pairs, and fulfil thus the ISO 16140-2:2016 requirements.

3.3 Inclusivity / exclusivity

The inclusivity study involves pure target strains to be detected or enumerated by the alternative method.

The exclusivity study involves pure non-target strains, which can be potentially cross-reactive, but are not expected to be detected or enumerated by the alternative method.

3.3.1 Test protocols

☐ Inclusivity

Listeria monocytogenes strain cultures were performed in BHI medium at 37°C. Dilutions were done in order to inoculate 10 to 100 cells/225 ml in the supplemented ONE broth, which was incubated for 22 h at 30 ± 1°C before performing the alternative method.

☐ Exclusivity

Negative strains cultures were performed in BHI at 37°C. Dilutions were realised in order to inoculate 10⁵ cells/ml BPW. The broths were incubated for 24 h at 37°C.

3.3.2 Results

Raw data are given in **Appendix 6**.

☐ Inclusivity

The 50 strains tested gave positive PCR tests and typical colonies on O&A plates.

☐ Exclusivity

No cross reaction was observed with the 30 non target strains tested.

3.4 Practicability

The alternative method practicability was evaluated according to the AFNOR criteria relative to method comparison study.

Packaging and reagents	The components needed for the analyse are: - Manual extraction: mericon DNA Bacteria Plus Kit * Fast Lysis buffer (2 x 25 ml) * Pathogen Lysis Tubes L (5 x 10) * Product Insert (x 1) * Quick Start Protocol (x 1) - Real-Time PCR: mericon <i>Listeria monocytogenes</i> kit * Yellow mericon Assay (1 x 96 reactions) * Red: Positive Control DNA (20 reactions) - QuantiTect Nucleic Acid Dilution Buffer (1.5 ml) - RNase-Free water (1.9 ml) * Blue: Multiplex PCR Master mix (1 040 µl) 50 x ROX Dye Solution (210 µl) * Product Insert (x 1) * Quick-Start Protocol (x 1)
Storage conditions and shelf-life	- mericon DNA Bacteria Plus kit: * Storage: room temperature (15 - 25°C) * Shelf-life: 2 years after manufacturing - mericon <i>Listeria monocytogenes</i> kit = shipped on dry ice * Storage: Multiplex PCR Master Mix - 15°C to - 30°C - Kit components not reconstituted: 2 - 8°C and protected from light - Reconstituted: 2 - 8°C * Shelf-life: expiration date stated on the kit box or envelope - Reconstituted : 1 month at 2 - 8°C - Long-term storage: - 15°C to - 30°C
Specific equipment	- Manual extraction: mericon DNA Bacteria Plus Kit * Tubes (2 and 1.5 ml) * Microcentrifuge * Thermomixer * Pipets and filter pipet tips * Loading block, RG strips tubes 72 * Strip tubes and caps, 0.1 ml - Real-Time PCR (manual) mericon <i>Listeria monocytogenes</i> kit * Rotor-Gene Q instrument * Rotor-Gene Q software version 2.3 * Locking ring 72 - Well Rotor * 72 well Rotor

Reagents	All the reagents are ready to use, except Multiplex PCR Master Mix and components: - Add 1 040 µl Multiplex PCR Master Mix to the vial of mericon Assay - Dissolve the dried positive control DNA with 200 µl of Quantitect Nucleic Acid Dilution Buffer		
Training	Two days are required		
Workflow (in minutes) for 30 samples	Steps	Reference method: ISO 11290-1/A1	Alternative method: mericon <i>Listeria monocytogenes</i> (manual DNA extraction)
	Negative samples		
	Sampling	60	60
	Subculture in Fraser 1	24	
	DNA extraction		90
	PCR		10
	Streaking onto O&A and Palcam (O1/P1)	30	
	Streaking onto O2/P2	30	
	Reading O1/P1	20	
	Reading O2/P2	20	
	Total for negative samples analyses	208	160
	Total/negative sample	6.9	5.3
	Presumptive samples or positive samples		
	Streaking onto TSYEA	90	
	Streaking onto O&A (100 µl)		15
	Confirmatory tests	135	
	Reading plates	5	5
	Total for positive samples	438	180
	Total/positive sample	14.6	6.0

<i>Time to result (in min)</i>	Steps	Reference method: ISO 11290-1/A1	Alternative method: mericon <i>Listeria monocytogenes</i> (manual DNA extraction)
	Negative samples		
	Sampling Half Fraser	Day 0	Day 0
	Fraser	Day 1	
	Extraction		Day 1
	PCR		Day 1
	First streaking onto O&A/Palcam (O1/P1)	Day 1	
	Second streaking onto O&A/Palcam (O2/P2)	Day 3	
	Reading plates (first streaking)	Day 2 - Day 3	
	Reading plates (second streaking)	Day 4 - Day 5	
	Presumptive positive or positive results		
	Subculture of typical colonies on TSAYE from O1/P1	Day 2 - Day 3	
	Streaking onto O&A (100 µl)		Day 1
	Subculture of typical colonies from O2/P2 on TSAYE	Day 4 - Day 5	
	Reading O&A plates		Day 2 - Day 3
	Confirmatory test	Day 3 - Day 6	
	Confirmatory test results	Day 4 - Day 7 Day 8 - Day 11*	
	* In the case of the Rhamnose and xylose tests are realised in tubes.		
<i>Technician background</i>	Technicians in food microbiology		
<i>Common step with the reference method</i>	No common step		
<i>Traceability of the results</i>	All the data are traced over time by computer.		
<i>Maintenance</i>	No optical normalization, and no reference dye Lifetime guarantee on highly stable LED, no calibration upon moving Minimal maintenance required		

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.

4.1 Study organisation

Collaborators number

Eleven Labs were involved in the study. Lab D decided to not participate to the study due to a logistical issue. The analyses were conducted by three collaborators (*i.e.* technicians) in one Lab (Lab C), two collaborators in one Lab (Lab E) and one collaborator in eight Labs.

Matrix and strain used

A cheese matrix (Raclette - 26 % fat, 1.75 g salt) was inoculated with *L. monocytogenes* 153, isolated from a raw milk cheese.

Samples

Samples were prepared and inoculated on Monday 27th March 2017, as described below:

- 24 blind coded samples for *Listeria monocytogenes* analysis by the reference method (EN ISO 11290-1/A1),
- 24 blind coded samples for analysis of *Listeria monocytogenes* by the *mericon*® Manual *Listeria monocytogenes* pathogen detection method,
- 1 sample for aerobic mesophilic flora enumeration by ISO 4833-1 method,
- 1 water flask labelled “Temperature Control” with a temperature probe for temperature control during transport and storage in the laboratory until the beginning of the analyses. 13 packages were prepared and sent to 10 laboratories.

 Inoculation

The targeted inoculation levels were the following:

- Level: 0 CFU/25 g,
- Level 1: inoculation level close to the RLOD in order to provide as much as possible fractional positive recovery data (2 CFU/sample);
- Level 2: 8 CFU/25 g.

 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 on Tuesday 28th of March or Wednesday 29th of March 2017 with the alternative and reference methods. The analyses by the reference and the alternative methods were performed on the same day.

4.2 Experimental parameters controls

4.2.1 Strain stability and background microflora stability

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

Strain stability was checked by inoculating the matrix at 2 CFU/25 g and 100 CFU/g. Enumerations were performed for the high contamination level and detection analyses were performed for the low contamination level after

24 h and 48 h storage at $5 \pm 3^\circ\text{C}$. *Triplicates* were analysed. The aerobic mesophilic flora was also enumerated; the results are given in Table 11.

Table 11 - Sample stability

Day	Reference method (detection) (25 g)			CFU/g (enumeration)			Aerobic mesophilic flora (CFU/g)
	Sample 1	Sample 2	Sample 3	Sample 1	Sample 2	Sample 3	
Day 0	+	+	-	100	110	120	$5.1 \cdot 10^8$
Day 1	+	+	+	119	146	133	$3.4 \cdot 10^8$
Day 2	+	+	+	110	108	120	$4.0 \cdot 10^8$

No evolution was observed during storage at $5^\circ\text{C} \pm 3^\circ\text{C}$.

4.2.2 Contamination levels

The contamination levels and the sample codification were the following (see Table 12).

Table 12 - Contamination levels

Level	Samples	Theoretical target level (b/25 g)	True level (b/25 g sample)	Low limit / 25 g sample	High limit / 25 g sample
Level 0	3 - 7 - 9 - 12 - 14 - 17 - 19 - 23	0	/	/	/
	25 - 28 - 30 - 35 - 37 - 40 - 45 - 48				
	53 - 56 - 58 - 60 - 63 - 67 - 69 - 71				
Level 1	2 - 5 - 6 - 11 - 13 - 16 - 21 - 24	2	1.6	1.3	2.0
	26 - 29 - 32 - 34 - 39 - 41 - 44 - 46				
	49 - 51 - 54 - 57 - 61 - 65 - 68 - 72				
Level 2	1 - 4 - 8 - 10 - 15 - 18 - 20 - 22	8	6.6	5.2	8.4
	27 - 31 - 33 - 36 - 38 - 42 - 43 - 47				
	50 - 52 - 55 - 59 - 62 - 64 - 66 - 70				

4.2.3 Logistic conditions

Temperature conditions are given in Table 13.

Table 13 - Sample temperatures at receipt

Collabo- rators	Temperature measured by the probe (°C)	Temperature measured at receipt (°C)	Receipt date and time	State of the package and samples at the receipt	Analysis date
A	2.7	3.7	28/03/2017 10h30	OK	29/03/2017
B	4.2	8.0	28/03/2017 15h20	OK	28/03/2017
C1	3.5	4.7	28/03/2017 09h00	OK	29/03/2019
C2	2.8	5.7	28/03/2017 09h00	OK	29/03/2019
C3	2.6	6.1	28/03/2017 09h00	OK	29/03/2019
E1	4.7	4.0	28/03/2017 17h00	OK	29/03/2017
E2	5.0	5.0	28/03/2017 17h00	OK	29/03/2017
F	7.0	6.2	29/03/2017 10h45	OK	29/03/2017
G	2.3	5.4	28/03/2017 11h30	OK	28/03/2017
H	2.8	7.0	28/03/2017 12h00	OK	28/03/2017
I	2.5	5.9	28/03/2017 12h00	OK	28/03/2017
J	7.9	/	28/03/2017 12h15	OK	28/03/2017
K	2.6	5.6	28/03/2017 12h00	OK	28/03/2017

No problem was encountered during the transport or at receipt for the 13 collaborators. All the samples were delivered on time and in appropriate conditions. Temperatures during shipment and at receipt were all correct.

4.3 Results analysis

The raw data are given in **Appendix 7**.

4.3.1 Expert laboratory results

The results obtained by the expert laboratory are given in Table 14.

Table 14 – Results obtained by the expert Lab.

Level	Reference method	Alternative method
L0	0/8	0/8
L1	7/8	5/8
L2	8/8	8/8

4.3.2 Results observed by the collaborative laboratories

Aerobic mesophilic flora enumeration

Depending on the Lab results, the enumeration levels varied from $4.0 \cdot 10^7$ to $2.3 \cdot 10^9$ CFU/g.

Listeria monocytogenes detection

Thirteen collaborators participated to the study. The results obtained for the reference method are provided in Table 15 (reference method) and Table 16 (alternative method).

Table 15 - Positive results by the reference method (ALL the collaborators)

Collaborator	Contamination level		
	L0	L1	L2
A	5	8	8
B	0	8	8
C1	0	8	8
C2	0	8	8
C3	0	8	8
E1	0	6	8
E2	0	8	8
F	0	7	8
G	0	7	8
H	0	7	8
I	0	8	8
J	0	7	8
K	0	7	8
TOTAL	P ₀ = 5	P ₁ = 97	P ₂ = 104

Table 16 - Positive results (before and after confirmation) by the alternative methods (ALL the collaborators)

Collaborators	Contamination level					
	L0		L1		L2	
	Before confirmation	After confirmation	Before confirmation	After confirmation	Before confirmation	After confirmation
A	3	3	8	8	8	8
B	0	0	7	7	8	8
C1	0	0	6	6	8	8
C2	0	0	8	8	8	8
C3	0	0	6	6	8	8
E1	0	0	7	7	8	8
E2	0	0	7	7	8	8
F	0	0	6	6	8	8
G	0	0	7	7	8	8
H	0	0	7	7	8	8
I	0	0	7	7	8	8
J	0	0	7	7	8	8
K	0	0	7	7	8	8
TOTAL	P ₀ = 3	CP ₀ = 3	P ₁ = 90	CP ₁ = 90	P ₂ = 104	CP ₂ = 104

Lab A obtained 5 positive results on control samples with the reference method and 3 positive results with the alternative method.

Lab J did not confirm the negative PCR results.

These 2 Labs were not retained for interpretation; the results from 11 collaborators were kept: B, C1, C2, C3, E1, E2, F, G, H, I and K.

4.3.3 Results of the collaborators retained for interpretation

The results obtained with the 11 collaborators kept for interpretation are presented in Table 17 (reference method) and Table 18 (alternative method).

Table 17 - Positive results by the reference method (Without Labs A and J)

Collaborators	Contamination level		
	L0	L1	L2
B	0	8	8
C1	0	8	8
C2	0	8	8
C3	0	8	8
E1	0	6	8
E2	0	8	8
F	0	7	8
G	0	7	8
H	0	7	8
I	0	8	8
K	0	7	8
TOTAL	P ₀ = 0	P ₁ = 82	P ₂ = 88

**Table 18 - Positive results (before and after confirmation)
by the alternative methods (Without Labs A and J)**

Collaborators	Contamination level					
	L0		L1		L2	
	Before confirmation	After confirmation	Before confirmation	After confirmation	Before confirmation	After confirmation
B	0	0	7	7	8	8
C1	0	0	6	6	8	8
C2	0	0	8	8	8	8
C3	0	0	6	6	8	8
E1	0	0	7	7	8	8
E2	0	0	7	7	8	8
F	0	0	6	6	8	8
G	0	0	7	7	8	8
H	0	0	7	7	8	8
I	0	0	7	7	8	8
K	0	0	7	7	8	8
TOTAL	P ₀ = 0	CP ₀ = 0	P ₁ = 75	CP ₁ = 75	P ₂ = 88	CP ₂ = 88

Three collaborators (Labs G, H and ADRIA) obtained some invalid PCR results. The message was: “⊗ sample control channel not in range”. This is due to the fact that the IC Cq was less than 28. The IC curves showed that the assay works; so these results can be accepted. No inhibition was observed during this study.

One collaborator (Lab I) find typical colonies on Palcam from the Half Fraser enrichment. It was asked to send these plates to ADRIA: the colonies were not characteristic (*Bacillus*).

4.4 Calculation and interpretation

4.4.1 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 19).

Table 19 - 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

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

Fractional positive results were obtained for the low inoculation level (L1). This inoculation level was retained for calculation.

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 20.

Table 20 - Summary of the obtained results with the reference method and the alternative method for Level 1

Response	Reference method positive (R+)	Reference method negative (R-)
Alternative method positive (A+)	Positive agreement (A+/R+) PA = 71	Positive deviation (R-/A+) PD = 4
Alternative method negative (A-)	Negative deviation (A-/R+) ND = 11	Negative agreement (A-/R-) NA = 2

Based on the data summarized in Table 20, 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 21).

Table 21 - Sensitivity, relative trueness and false positive ratio percentages

Sensitivity for the alternative method:	$SE_{alt} = \frac{(PA+PD)}{(PA+PD+ND)} \times 100\% =$	87.2 %
Sensitivity for the reference method:	$SE_{ref} = \frac{(PA+ND)}{(PA+PD+ND)} \times 100\% =$	95.3 %
Relative trueness	$RT = \frac{(PA+NA)}{N} \times 100\% =$	83.0 %
False positive ratio for the alternative method	$FPR = \frac{FP}{NA} \times 100\% =$	0 %

4.4.3 Interpretation of data

The negative deviations are listed in Table 22 and the positive deviations in Table 23 for Level 1.

Table 22 - Negative deviations for Level 1

Collaborators	Samples No
B	11
C1	2 & 21
C3	57 & 72
E1	24
E2	41
F	5
G	21
H	5
I	21

For 2 samples (C72 and H5), the confirmatory tests concluded to the presence of *Listeria monocytogenes* while the PCR results were negative. It was asked to these collaborators to test again twice the DNA extracts (we received the results from Lab H only). Positive PCR results were then observed (Ct values were: + 34.47 / + 34.94). The detection limit of the alternative method was probably not reached.

Table 23 - Positive deviations for Level 1

Collaborators	Samples No
E1	2 & 21
G	2
H	16

For an **unpaired study design**, the difference between (ND – PD) is calculated for the level(s) where fractional recovery is obtained (so L_1 and possibly L_2). The observed value found for (ND – PD) shall not be higher than the AL. The AL is defined as $[(ND - PD)_{\max}]$ and calculated per level where fractional recovery is obtained as described below using the following three parameters:

$$(p+)_{\text{ref}} = \frac{P_x}{N_x}$$

where

P_x = number of samples with a positive result obtained with the reference method at level x (L_1 or L_2) for all the collaborators

N_x = number of samples tested at level x (L_1 or L_2) with the reference method by all the collaborators

$$(p+)_{\text{alt}} = \frac{CP_x}{N_x}$$

where

CP_x = number of samples with a confirmed positive result obtained with the alternative method at level x (L_1 or L_2) for all the collaborators;

N_x = number of samples tested at level x (L_1 or L_2) with the alternative method by all the collaborators.

$$(ND-PD)_{\max} = \sqrt{3N_x \times \left((p+)_{\text{ref}} + (p+)_{\text{alt}} - 2((p+)_{\text{ref}} \times (p+)_{\text{alt}}) \right)}$$

where

N_x = number of samples tested for level x (L_1 or L_2) with the reference method by all the collaborators.

The AL is not met when the observed value is higher than the AL. When the AL is not met, investigations should be made (e.g. root cause analysis) in order to provide an explanation of the observed results. Based on the AL and the additional information, it is decided whether the alternative method is regarded as not fit for purpose. The reasons for acceptance of the alternative method when the AL is not met shall be stated in the study report.

In this study, fractional recovery was observed at Level 1. The calculations are the following, according to the EN ISO 16140-2:2016 (See Table 24).

Table 24 - Calculations

N_x	88
$(p+)_{\text{ref}}$	0.93
$(p+)_{\text{alt}}$	0.85
AL = (ND - PD) max	7.19
ND - PD	7.0
Conclusion	ND - PD < AL

The ISO 16140-2 (2016) requirements are fulfilled as (ND - PD) is lower than the AL.

4.4.4 Evaluation of the RLOD between laboratories

The RLOD was calculated using the EN ISO 16140-2:2016 Excel spreadsheet available at <http://standards.iso.org/iso/16140> - RLOD (clause 5-1-4-2 Calculation and interpretation of RLOD) version 06.07.2015. The results are used only for information (see Table 25).

Table 25 - RLOD

Name	RLOD	RLODL	RLODU	b=ln(RLOD)	sd(b)	z-Test statistic	p-value
Cheese	1.404	0.944	2.089	0.340	0.199	1.709	0.087

5 CONCLUSION

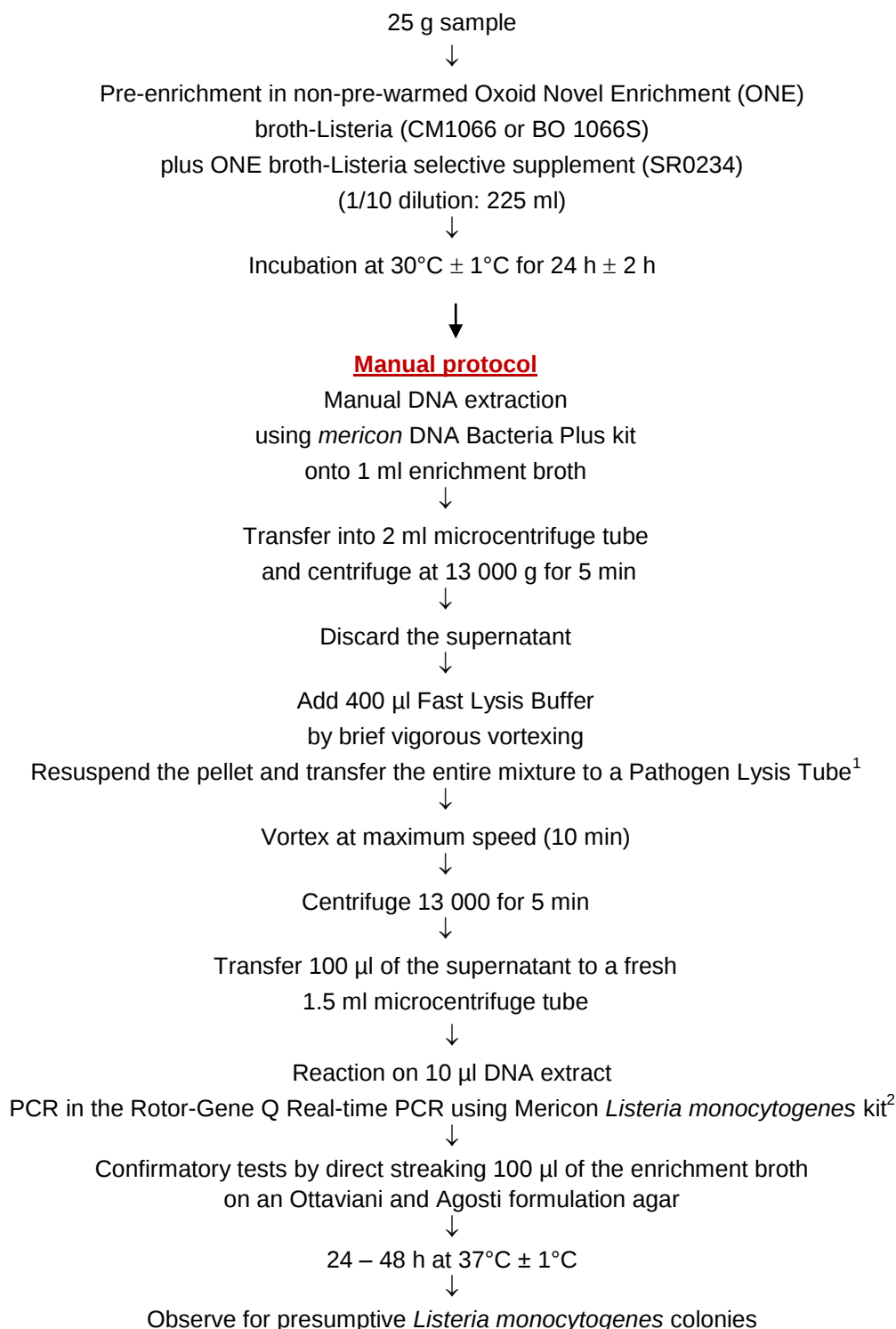
The method comparison study conclusions are:

- ☒ Based on this ISO 16140 validation study, the *mericon*[®] Manual *Listeria monocytogenes* Detection shows satisfying sensitivity study for meat and dairy categories.
- ☒ The RLOD are below the AL fixed at 2.5 for an unpaired study for the two tested matrix/strain pairs.
- ☒ The alternative method is specific and selective.
- ☒ The alternative method allows a fast screening of the samples; the negative results are obtained in one day. 20.7% of the samples showed PCR inhibitions, implying DNA extracts dilutions to get successful PCR runs.
- ☒ A decision tree is available (data interpretation), additionally to the software, and shall be followed by the users.
- ☒ It is possible to store the primary enrichment broth for 72 h at 5°C ± 3°C.
- ☒ The method allows a one-day screening of the negative samples.

The **inter-laboratory study conclusions** are:

- ☒ The data and interpretations comply with the EN ISO 16140-2:2016 requirements. **The *mericon*[®] Manual *L. monocytogenes* is considered equivalent to the ISO standard.**

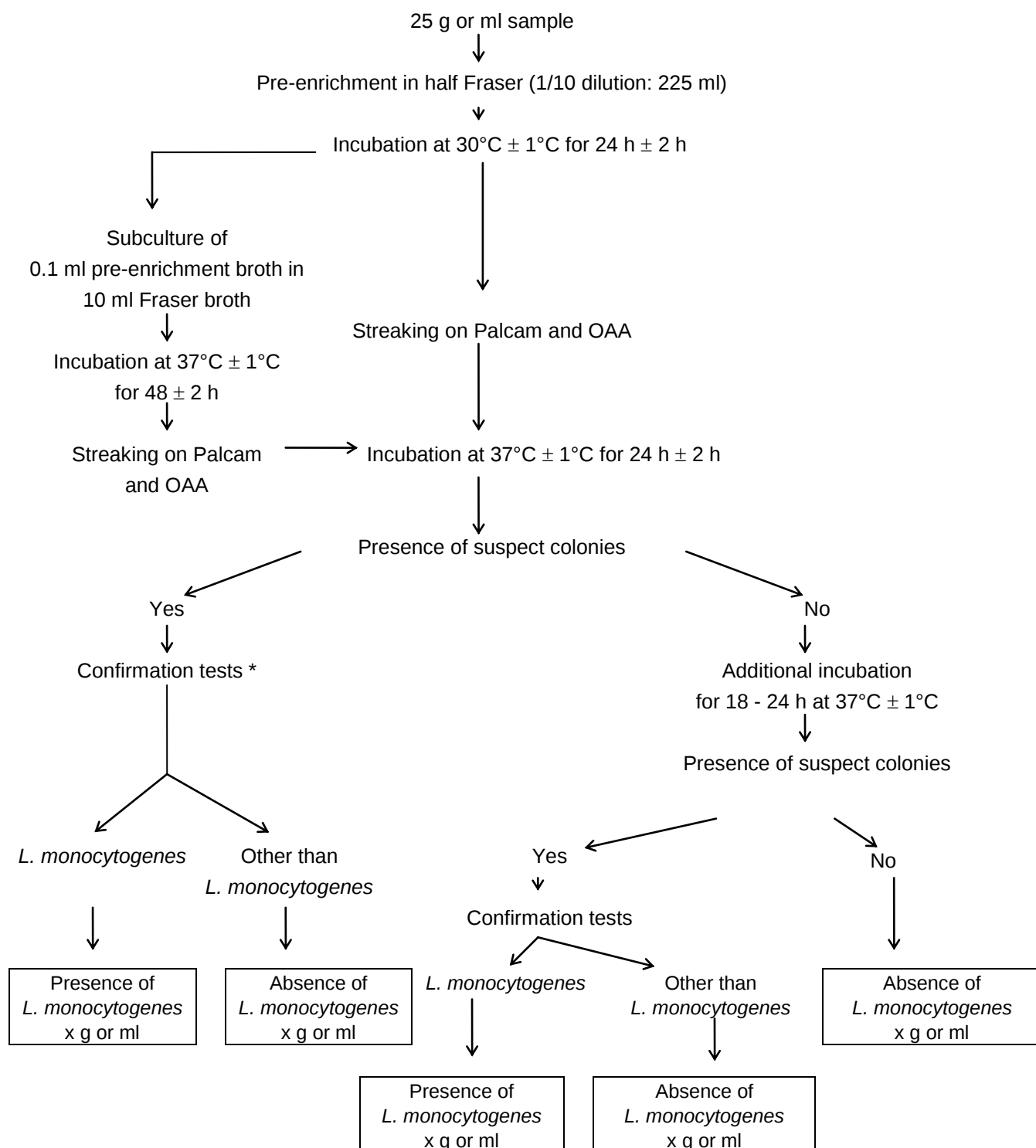
Appendix 1 – Flow diagram of the alternative method *mericon*[®] Manual *Listeria monocytogenes* Detection



¹ If residues of enrichment media colour the bacterial pellet, wash at least twice by repeated centrifugation at 13 000 g for 5 min and resuspend in 500 µl Fast Lysis Buffer. Washing should be repeated until the bacterial suspension is colourless.

² If PCR inhibition is observed, proceed to DNA extract dilution

Appendix 2 – Flow diagram of the reference method:
ISO 11290-1/A1: Microbiology of food and animal feeding stuffs - Horizontal
method for the detection and enumeration of *Listeria monocytogenes*
Part 1: Detection Method



Confirmation tests: Gram, Catalase, Haemolyse, Camp Test, biochemical Listeria Gallery

Appendix 3 – Artificial contamination of the samples

Sample N°	Product (French name)	Product (English name)	Artificial contaminations					Global result
			Strain	Origin	Injury applied	Injury measurement	Inoculation level	
3485	Lait cru de brebis	Ewe raw milk	Cross contamination with raw ewe milk cheese					-
3486	Lait cru de brebis	Ewe raw milk	Cross contamination with emmental					+
3487	Lait ribot	Fermented milk	Cross contamination with raw cow milk cheese					+
3492	Lait 1/2 écrémé pasteurisé	Pasteurised half skimmed milk	<i>Listeria monocytogenes</i> Ad 1201	Raw milk cheese	HT 10 min 56°C	0.48	5-4-7-2-3 (4.2)	+
3494	Tiramisu à la framboise	Dairy based dessert (Tiramisu with raspberries)	<i>Listeria monocytogenes</i> Ad 1201	Raw milk cheese	HT 10 min 56°C	0.48	5-4-7-2-3 (4.2)	+
3495	Mascarpone framboise	Dairy based dessert (Mascarpone with raspberries)	<i>Listeria monocytogenes</i> Ad 1201	Raw milk cheese	HT 10 min 56°C	0.48	5-4-7-2-3 (4.2)	-
1471	Lait cru	Raw milk	<i>Listeria monocytogenes</i> Ad 1781	Raw milk	Seeding 48h 4°C	/	0-1-0-1-0 (0.4)	+
1670	Lait cru	Raw milk	<i>Listeria monocytogenes</i> Ad 1781	Raw milk	Seeding 48h 4°C	/	0-1-0-1-0 (0.4)	+
810	Fromage pasteurisé	Pasteurized cheese	<i>Listeria monocytogenes</i> Ad 249	Dairy product	HT 15 min/56°C	0.70	4-6-5-6-3 (4.8)	-
813	Forêt noire chantilly	Dessert	<i>Listeria monocytogenes</i> Ad 249	Dairy product	HT 15 min/56°C	0.70	4-6-5-6-3 (4.8)	+
1851	Bleu des causses pasteurisé	Blue pasteurised cheese	<i>Listeria monocytogenes</i> Ad 260	Cheese	Seeding 48h 4°C	/	0-0-0-1-0 (0.2)	-
809	Fromage pasteurisé	Pasteurized cheese	<i>Listeria monocytogenes</i> Ad 523	Cheese	HT 15 min/56°C	0.47	1-2-4-1-2 (2.0)	-
812	Choux chantilly	Dessert	<i>Listeria monocytogenes</i> Ad 523	Cheese	HT 15 min/56°C	0.47	1-2-4-1-2 (2.0)	+
814	Fraisier à la crème	Dessert	<i>Listeria monocytogenes</i> Ad 523	Cheese	HT 15 min/56°C	0.47	1-2-4-1-2 (2.0)	-
1675	Gros lait	Fermented milk	<i>Listeria monocytogenes</i> Ad 610	Milk	Seeding 48h 4°C	/	2-1-0-1-1 (1.0)	-
1676	Lait cru	Raw milk	<i>Listeria monocytogenes</i> Ad 610	Milk	Seeding 48h 4°C	/	2-1-0-1-1 (1.0)	+
3493	Lait entier pasteurisé	Pasteurised milk	<i>Listeria monocytogenes</i> Ad 611	Raw milk	HT 10 min 56°C	0.44	0-1-0-0-1 (0.4)	+
3496	Chou chantilly	Pastry with Chantilly	<i>Listeria monocytogenes</i> Ad 611	Raw milk	HT 10 min 56°C	0.44	0-1-0-0-1 (0.4)	+
1673	Lait fermenté	Fermented milk	<i>Listeria monocytogenes</i> Ad 629	Cheese	Seeding 48h 4°C	/	1-0-1-1-0 (0.6)	-
1674	Lait ribot	Fermented milk	<i>Listeria monocytogenes</i> Ad 629	Cheese	Seeding 48h 4°C	/	1-0-1-1-0 (0.6)	+
1671	Lait ribot	Fermented milk	<i>Listeria monocytogenes</i> Ad 632	Milk	Seeding 48h 4°C	/	1-1-0-0-0 (0.4)	-
1672	Lait cru	Raw milk	<i>Listeria monocytogenes</i> Ad 632	Milk	Seeding 48h 4°C	/	1-1-0-0-0 (0.4)	-
811	Brie pasteurisé	Pasteurized cheese	<i>Listeria monocytogenes</i> Ad 637	Milk	HT 15 min/56°C	2.53	1-4-6-2-5 (3.6)	-
806	Glace crème brûlée	Ice cream	<i>Listeria monocytogenes</i> Ad 665	Raw milk	-20°C	0.86	3-3-2-0-1 (1.8)	-
807	Glace vanille	Ice cream	<i>Listeria monocytogenes</i> Ad 665	Raw milk	-20°C	0.86	3-3-2-0-1 (1.8)	+
808	Crème glacée au caramel	Ice cream	<i>Listeria monocytogenes</i> Ad 665	Raw milk	-20°C	0.86	3-3-2-0-1 (1.8)	-
1850	Leerdammer pasteurisé	Pasteurised cheese	<i>Listeria monocytogenes</i> AOOL097	Milk	Seeding 48h 4°C	/	0-0-1-0-0 (0.2)	+
1852	Bleu pasteurisé	Blue pasteurised cheese	<i>Listeria monocytogenes</i> AOOL097	Milk	Seeding 48h 4°C	/	0-0-1-0-0 (0.2)	+

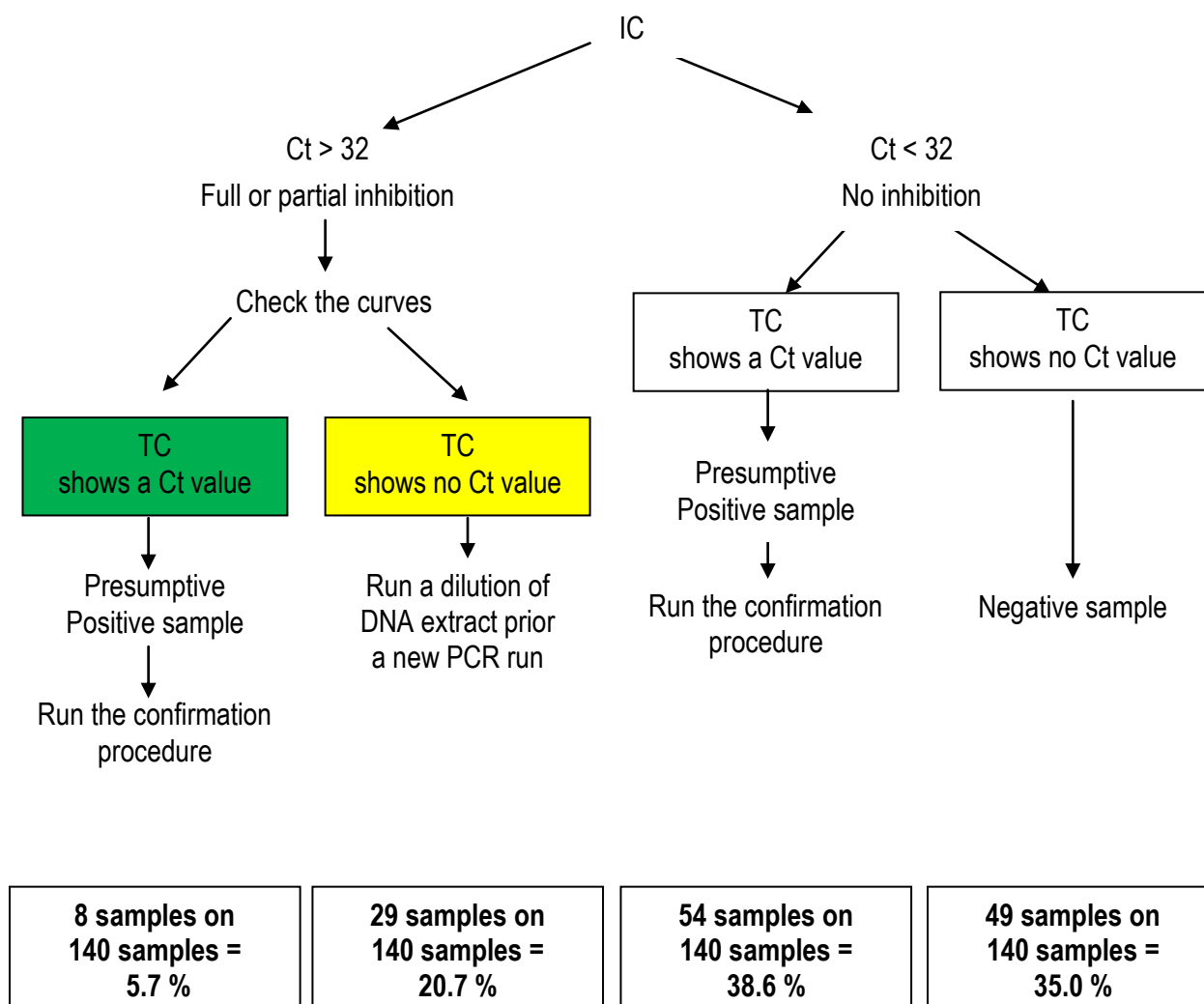
Appendix 4 – Sensitivity study: raw data

Bold typing : artificially inoculated samples

Listeria detection results:

H-:	characteristic Listeria colonies without halo
H+:	characteristic Listeria colonies with halo
-:	no typical colonies but presence of background microflora
st:	plate without any colony
PA:	positive agreement
NA:	negative agreement
ND:	negative deviation
PD:	positive deviation
PPNA:	positive presumptive negative agreement
PPND :	positive presumptive negative deviation
NC:	no characteristic colony on TSYEA
d:	doubtful colony
*:	PCR on 1/10 dilution of the DNA extract
**:	PCR on 1/50 dilution of the DNA extract
***:	PCR on 1/100 dilution of the DNA extract
Ct:	PCR cycle threshold
IC:	Internal Control
TC:	Target Channel
IIC:	Inhibited Internal Control
ITC:	Inhibited Target Channel
I:	Inhibited

Observed data based on the decision tree for data interpretation



140 samples were analysed. 139 samples were used in the interpretation.

Note that the sample 702 was removed from the interpretation as inhibitions were observed whatever the dilution of the DNA extract.

Based on the decision tree, the colours “green” and “yellow” are reported in the following tables.

MEAT PRODUCTS																
Sample N°	Product (French name)	Product (English name)	Reference method: EN ISO 11290-1/A1 ♦					Alternative method: <i>mericon</i> ® Manual <i>Listeria monocytogenes</i> Detection								
								24h ± 2h at 30°C ± 1°C								Reference method on ONE Broth <i>Listeria</i>
								<i>mericon Listeria monocytogenes</i> PCR result			Confirmations		<i>Listeria monocytogenes</i>			
											O&A (100µl)		Final result Manual DNA extraction	Agreement Ref/Alt Manual		
			Manual DNA extraction (Ct value)			Typical colonies	Confirmation result									
Result	Ct Target Channel (TC)	Ct Internal Control (IC)														
3225	Jarret de porc	Raw pork meat	st	st	st	st	-	+	22.64	29.05	H+	<i>L. monocytogenes</i>	+	PD		
3226	Haché de veau	Ground veal	-	-	-	-	-	-		29.67	H-	-	-	NA	-	
3227	Viande de poulet	Chicken meat	H+/H-	+	H+/H-	+	+	IIC/+*	30.09*	34.26/28.15*	H+	<i>L. monocytogenes</i>	+	PA		
3228	Steak haché	Ground beef	H+/H-	+	H+/H-	+	+	+	30.42	29.12	H+/H-	<i>L. monocytogenes</i>	+	PA		
3229	Poulet cuit	Cooked chicken	H+/H-	+	H+	+	+	-		31.36	-	-	-	ND	-	
3230	Boulettes provençales	Seasoned balls	-	-	-	-	-	IIC/-*		32.93/30.46*	-	-	-	NA	-	
3231	Emincés de volaille kebab	Sliced cooked seasoned poultry meat	st	-	-	-	-	-		30.40	st	-	-	NA	-	
3232	Cordon bleu de dinde	Cooked turkey	H+/H-	+	H+/H-	+	+	+	24.71	28.9	H+	<i>L. monocytogenes</i>	+	PA		
3233	Rillettes	Pâté	st	st	st	st	-	-		29.58	-	-	-	NA	-	
3234	Jambon de Bayonne	Dry ham	st	+(1)	H-	+	+	+	23.73	28.88	H+/H-	<i>L. monocytogenes</i>	+	PA		
3235	Saucisson	Cooked sausage	-	st	H+	+	+	-		30.44	-	-	-	ND	-	
3236	Saucisse	Sausage	st	-	st	st	-	+	26.64	28.48	H+	<i>L. monocytogenes</i>	+	PD		
3468	Carpaccio de boeuf	Beef Carpaccio	-	-	St	-	-	-		29.31	-	-	-	NA	-	
3469	Steak haché	Ground beef	H+/H-	+(1)	H+/H-	+	+	+	28.45	28.45	H+/H-	<i>L. monocytogenes</i>	+	PA		
3470	Sauté de dinde	Raw turkey meat	H+	+	/	/	+	-		31.08	-	-	-	ND	-	
3471	Pointe de jambon	Pork meat	H+/H-	+	H+ni/H-	+	+	+	29.08	23.92	H+/H-	<i>L. monocytogenes</i>	+	PA		
3472	Viande de poulet congelée	Frozen poultry meat	H+/H-	+	H+	+	+	IIC/+*	30.16	34.77/30.77*	H+	<i>L. monocytogenes</i>	+	PA		
3473	Rillettes au jambon	Ham rillettes	H+	+	/	/	+	+	29.41	27.01	H+/H-	<i>L. monocytogenes</i>	+	PA		
3474	Pâté de campagne	Pork pâté	-	-	-	-	-	-		30.02	-	-	-	NA	-	
3475	Mousse de canard	Duck pâté	H+	+	/	/	+	IIC/-*		32.27/30.75*	-	-	-	ND	-	
3476	Saucisses de Starasbourg fumées	Smoked Strasbourg sausages	st	-	-	-	-	-		29.95	-	-	-	NA	-	
3477	Saucisse	Sausage	H-	+	H-	+	+	IIC/+*	29.42/32.66*	38.60/29.85*	H+	<i>L. monocytogenes</i>	+	PA		
3478	Merguez	Merguez	H-	+(4)	H+ni/H-	+	-	-		30.0	-	-	-	NA	-	
3479	Cordon bleu de dinde cuit congelé	RTRH meal(turkey)	H+/H-	+	H+/H-	+	+	+	29.20	30.31	H+	<i>L. monocytogenes</i>	+	PA		
3480	Cordon bleu de dinde	Frozen RTRH meal	H+(3)	+	H+	+	+	IIC/IIC*/-.**		34.55/35.72*/	H+	<i>L. monocytogenes</i>	-	ND		

♦ Analyses performed according to the COFRAC accreditation
ADRIA Développement
Summary Report (Version 0)
mericon® Manual *L. monocytogenes* (QIA 36/02 - 05/17)

MEAT PRODUCTS														
Sample N°	Product (French name)	Product (English name)	Reference method: EN ISO 11290-1/A1 *					Alternative method: mericon® Manual <i>Listeria monocytogenes</i> Detection						
								24h ± 2h at 30°C ± 1°C						
								mericon <i>Listeria monocytogenes</i> PCR result			Confirmations		<i>Listeria monocytogenes</i>	
								Manual DNA extraction (Ct value)			O&A (100µl)		Final result Manual DNA extraction	Agreement Ref/Alt Manual
			O1	P1	O2	P2	Result L. mono-cytogenes	Result	Ct Target Channel (TC)	Ct Internal Control (IC)	Typical colonies	Confirmation result		
	cuit congelé	(turkey)								29.32**				
3481	Boudin blanc aux morilles	Cooked delicatessen	H+(1)	-	H+	+	+	+	26.04	28.27	H+	<i>L. monocytogenes</i>	+	PA
3482	Emincés de poulet mariné	RTC meat (sliced marinated chicken)	st	-	-	-	-	-		31.88	-	-	-	NA
3483	Côte de porc miel moutarde citron	RTC meat (pork meat with mustard and lemon)	H+	+	H+	+	+	+	29.14	29.38	H+	<i>L. monocytogenes</i>	+	PA
3484	Emincés d'agneau au thym	RTC meat (sliced lamb with thyme)	-	-	-	-	-	-		31.40	-	-	-	NA
3565	Baguette Fflammekueche	RTRH (bacon bread)	H+	+	H+	+	+	+	34.70	29.13	-(H+ 72h)	<i>L. monocytogenes</i>	+	PA
3566	Croque monsieur poulet	RTRH (chicken)	st	st	st	-	-	-			-	-	-	NA
3567	Escalope de dinde	Turkey escalope	H+	+	H+	+	+	-			-	-	-	ND
3568	Terrine de lapin	Rabbit pâté	H+	+	H+	+	+	+	28.06		-(H+ 72h)	<i>L. monocytogenes</i>	+	PA
549	Steak haché	Ground beef	H-	-	H-	+	-	-		30.29	H-		-	NA
550	Filet de porc	Pork fillet	H+	+	H+	+	+	+	18.55	30.44	H+	<i>L. monocytogenes</i>	+	PA
551	Blanquette de poulet	Chicken stew	H+	st	H+	+	+	IIC/+*	33.99*	30.39*	H+	<i>L. monocytogenes</i>	+	PA
552	Allumettes de jambon	Ground ham	H-	st	H-	+	-	-		30.91	H-		-	NA
553	Wrap poulet crudités	RTH chicken	-	-	-	-	-	IIC/-*		35.81/29.89*	H-		-	NA
554	Cordon bleu de dinde	RTRH turkey	H+	-	H+	+	+	-	-	31.73	H-(Fraser 1 72h:H+)	<i>L. monocytogenes</i>	-	ND
555	Côte de porc miel moutarde	RTC (pork honey)	H-	-	H+	+	+	-		31.73	H-	-	-	ND
556	Sandwich américain au poulet	RTH (chicken)	st	-	-	-	-	-		31.45	H-	-	-	NA
557	Terrine à l'échalote	Pâté	st	-	st	-	-	-		31.77	H-	-	-	NA
558	Rosette	Delicatessen	st	-	-	-	-	ITC/+*	39.58/*	30.61/30.34*	H+(3)	<i>L. monocytogenes</i>	+	PD
559	Rillettes de porc	Rillettes	st	st	st	st	-	-		31.40	st		-	NA
560	Saucisses de Strasbourg fumées	Smoked sausages	st	-	-	-	-	-		30.65	H-		-	NA
561	Buchette pralinée	Dessert (praline)	H+	+	H+	+	+	+	21.19	30.71	H+	<i>L. monocytogenes</i>	+	PA
687	Escalope de dinde	Turkey	-	-	st	-	-	+	35.95	30.22	H+	<i>L. monocytogenes</i>	+	PD
688	Emincés de porc	Ground pork	H+	+	H+	+	+	+	26.72	31.77	H+	<i>L. monocytogenes</i>	+	PA

MEAT PRODUCTS														
Sample N°	Product (French name)	Product (English name)	Reference method: EN ISO 11290-1/A1 *					Alternative method: <i>mericon</i> ® Manual <i>Listeria monocytogenes</i> Detection						
								24h ± 2h at 30°C ± 1°C						
								mericon <i>Listeria monocytogenes</i> PCR result			Confirmations		<i>Listeria monocytogenes</i>	
								Manual DNA extraction (Ct value)			O&A (100µl)		Final result Manual DNA extraction	Agreement Ref/Alt Manual
			O1	P1	O2	P2	Result L. mono- cytogenes	Result	Ct Target Channel (TC)	Ct Internal Control (IC)	Typical colonies	Confirmation result		
689	Steak haché maison	Ground beef	st	-	st	-	-	-		30.54	-		-	NA
690	Steak haché	Ground beef	H+	+(2)	H+	+	+	+	34.12	30.34	H+	<i>L. monocytogenes</i>	+	PA
691	Viande gros grain	Ground chicken	st	-	-	-	-	IIC/IIC*/-**		33.25/32.86*/ 30.65**	-		-	NA
692	Chair à saucisses	Ground sausages	st	-	st	st	-	-		30.31	-		-	NA
693	Rillettes	Rillettes	-	st	st	st	-	-		31.12	-		-	NA
694	Boudin blanc	Delicatessen	st	st	-	-	-	IIC/-*		32.12/30.58*	-		-	NA
695	Allumettes de jambon	Ground ham	H-	+	H-	+	-	-		31.18	-		-	NA
696	Poitrine 1/2 sel fumée	Smoked pork	st	st	st	st	-	-		31.43	-		-	NA
697	Langue de porc	Pork	H+	+	H+	+	+	+	19.30	30.19	H+	<i>L. monocytogenes</i>	+	PA
707	Baguette lardons emmenthal	RTRH (pork)	-	-	-	-	-	IIC/-*		32.91/31.40*	-		-	NA
708	Baguette flammekueche	RTRH (bacon bread)	-	-	-	-	-	IIC/-*		33.12/30.40*	-		-	NA
709	Pizza chorizo poivrons	RTRH (chorizo)	-	-	-	-	-	IIC/IIC*/IIC**/ _***		34.13/34.53*/ 32.30**/31.65***	-		-	NA
815	Sauté de dinde	Raw turkey	H-d	st	H-d	+	-	-/-		30.63/31.95	H-		-	NA
816	Viande de poulet congelée	Frozen raw chicken	H-	-	H-	+	-	+/+	27.98/39.82	31.69/31.33	H+	<i>L. monocytogenes</i>	+	PD
817	Cuisse de poulet	Chicken	st	-	-	-	-	-/-		30.87/30.63	st		-	NA
818	Viande de poulet broyée	Ground chicken	H-	-	H-	+	-	+/+	29.34/28.78	30.71/30.96	H+	<i>L. monocytogenes</i>	+	PD
819	Pâté de tête	Delicatessen	H-	+	H-	+	-	-/-		30.02/30.67	H-		-	NA
820	Poitrine 1/2 sel	Delicatessen	st	st	st	st	-	-/-		30.13/31.16	st		-	NA
821	Rillettes de canard	Delicatessen	st	-	st	-	-	+/+	29.34/28.78	30.71/30.96	H+	<i>L. monocytogenes</i>	+	PD
822	Terrine de campagne	Delicatessen	st	st	-	-	-	-/-		29.49/30.22	st		-	NA
823	Sandwich au bacon	RTE (sandwich)	st	st	st	-	-	-/IIC/-*		31.52/32.48/ 31.33*	-		-	NA
824	Baguette flammekueche	RTRH (bacon bread)	-	-	-	-	-	IIC/IIC/IIC* /IIC**/****	35.11/35.26/ 35.49*/37.46**/ 34.51***	34.77/33.24/ 34.00*/32.16**/ 30.13***	H+	<i>L. monocytogenes</i>	+	PD
825	Croque Monsieur toasté	RTRH (croque-monsieur)	st	-	-	-	-	IIC/IIC/-*		32.99/33.55/ 31.43*	-		-	NA
826	Baguette pizza lardons	RTRH (bread bacon)	H+	+	H+	+	+	IIC/IIC/+*	28.57/28.83/ 27.39*	32.70/33.50/ 30.11	H+	<i>L. monocytogenes</i>	+	PA

DAIRY PRODUCTS

Sample N°	Product (French name)	Product (English name)	Reference method: EN ISO 11290-1/A1 [♦]					Alternative method: <i>mericon</i> ® Manual <i>Listeria monocytogenes</i> Detection								Reference method on ONE Broth Listeria		
								24h ± 2h at 30°C ± 1°C										
								<i>mericon Listeria monocytogenes</i> PCR result			Confirmations		<i>Listeria monocytogenes</i>					
															O&A (100µl)		Final result Manual DNA extraction	Agreement Ref/Alt Manual
			Manual DNA extraction (Ct value)			Typical colonies	Confirmation result											
Result	Ct Target Channel (TC)	Ct Internal Control (IC)																
3237	Lait cru de brebis	Raw ewe milk	H+	st	H+	+	+	+	18.42	28.1	H+	<i>L. monocytogenes</i>	+	PA				
3238	Lait cru de brebis	Raw ewe milk	H+	+	H-	+	-	-		29.7	H+/H-	<i>L. ivanovii</i>	-	NA	-			
3239	Lait cru de brebis	Raw ewe milk	H+/H-	+	H+(1)/H-	+	-	-		30.85	-	-	-	NA	-			
3240	Lait cru de brebis	Raw ewe milk	st	-	-	st	-	-		30.64	-	-	-	NA	-			
3241	Fromage au lait cru de vache	Raw milk cheese	st	st	st	st	-	IIC/*		34.86/31.29*	st	-	-	NA	-			
3242	Fromage au lait cru de vache	Raw milk cheese	H+(4)	+(1)	H+	+	+	IIC/*		32.22/31.38*	-	-	-	ND	-			
3243	Fromage au lait cru de vache	Raw milk cheese	H+	+	H+	+	+	+	19.97	30.1	H+	<i>L. monocytogenes</i>	+	PA				
3244	Fromage au lait cru de vache	Raw milk cheese	st	st	st	st	-	IIC/*		38.33/30.58*	-	-	-	NA	-			
3245	Fromage au lait cru de vache	Raw milk cheese	st	st	st	st	-	IIC/*		36.73/30.81*	H-(3)	-	-	NA	-			
3246	Emmental	Emmental	-	-	-	-	-	-		30.05	-	-	-	NA	-			
3247	Fromage au lait cru de vache	Raw milk cheese	H+	+	H+	+	+	IIC/+*	21.29/20.24*	33.04/*	H+	<i>L. monocytogenes</i>	+	PA				
3485	Lait cru de brebis	Ewe raw milk	-	-	st	st	-	-		29.56	H-	-	-	NA	-			
3486	Lait cru de brebis	Ewe raw milk	H+	-	/	/	+	+	27.95	29.44	H+	<i>L. monocytogenes</i>	+	PA				
3487	Lait ribot	Fermented milk	H+	+	/	/	+	+	27.13	29.31	H+	<i>L. monocytogenes</i>	+	PA				
3488	Fromage au lait cru de vache	Raw cow milk cheese	H+	+	/	/	+	+	31.83	27.76	H+	<i>L. monocytogenes</i>	+	PA				
3489	Fromage au lait cru de vache	Raw cow milk cheese	H+	+	/	/	+	+	32.30	30.41	H+	<i>L. monocytogenes</i>	+	PA				
3490	Mélange de fromages	Mix of cheeses	H+	+	/	/	+	+	27.93	29.15	- (H+ 72h)	<i>L. monocytogenes</i>	+	PA				
3491	Fromage au lait cru de vache	Raw cow milk cheese	st	-	-	-	-	-		29.59	-	-	-	NA	-			
3492	Lait 1/2 écrémé pasteurisé	Pasteurised half skimmed milk	st	-	-	-	-	+	29.81	30.81	H+	<i>L. monocytogenes</i>	+	PD				
3493	Lait entier pasteurisé	Pasteurised milk	st	st	st	st	-	+	36.18	30.36	H+	<i>L. monocytogenes</i>	+	PD				

[♦] Analyses performed according to the COFRAC accreditation
 ADRIA Développement
 Summary Report (Version 0)
mericon® Manual *L. monocytogenes* (QIA 36/02 - 05/17)

DAIRY PRODUCTS															
Sample N°	Product (French name)	Product (English name)	Reference method: EN ISO 11290-1/A1 ♦				Alternative method: <i>mericon</i> ® Manual <i>Listeria monocytogenes</i> Detection								
							24h ± 2h at 30°C ± 1°C								Reference method on ONE Broth <i>Listeria</i>
							<i>mericon</i> <i>Listeria monocytogenes</i> PCR result			Confirmations		<i>Listeria monocytogenes</i>			
			O&A (100µl)		Final result Manual DNA extraction	Agreement Ref/Alt Manual									
			Manual DNA extraction (Ct value)				Typical colonies	Confirmation result							
			Result	Ct Target Channel (TC)	Ct Internal Control (IC)										
3494	Tiramisu à la framboise	Dairy based dessert (Tiramisu with raspberries)	st	-	H+	+	+	+	36.48	30.65	H+	<i>L. monocytogenes</i>	+	PA	
3495	Mascarpone framboise	Dairy based dessert (Mascarpone with raspberries)	st	-	-	-	-	-		30.12	H+	<i>L. monocytogenes</i>	-	NA	
3496	Chou chantilly	Pastry with Chantilly	H+/H-	+	/	/	+	+	35.60	31.67	H+	<i>L. monocytogenes</i>	+	PA	
562	Flan pâtissier	Dessert (flan)	H+	+	H+	+	+	+	25.01	31.36	H+	<i>L. monocytogenes</i>	+	PA	
563	Verrine fraise chantilly	Dessert (strawberry Chantilly)	H+	+	H+	+	+	-		29.88	H-		-	ND	-
564	Emmental râpé	Grated cheese	H+	+	H+	+	+	+	28.06	29.96	H+(fraser1)	<i>L. monocytogenes</i>	+	PA	
565	Fromage au lait cru de vache	Raw milk cheese	st	+	-	-	-	IIC/*		32.07/31.20*	st		-	NA	+
566	Fromage au lait cru de vache	Raw milk cheese	H-	+	H-	+	-	IIC/IIC*/-.**		35.51/32.97*/30.75**	H-		-	NA	-
567	Fromage au lait cru de vache	Raw milk cheese	H+	-	H+	+	+	+	24.64	29.37	H+	<i>L. monocytogenes</i>	+	PA	
568	Lait cru de vache	Raw milk	st	-	st	-	-	-		30.65	H-(2)		-	NA	-
569	Lait cru de vache	Raw milk	st	-	st	-	-	-		30.57	st		-	NA	-
570	Lait cru de vache	Raw milk	st	-	-	-	-	-		30.65	H-		-	NA	-
571	Lait cru de vache	Raw milk	st	-	-	-	-	-		31.21	H-		-	NA	-
698	Lait cru de brebis	Raw ewe milk	st	-	-	-	-	-		30.42	-		-	NA	-
699	Lait cru de brebis	Raw ewe milk	st	-	st	st	-	-		30.56	-		-	NA	-
700	Lait cru de brebis	Raw ewe milk	-	-	-	-	-	-		30.67	st		-	NA	-
701	Lait cru de brebis	Raw ewe milk	st	-	st	-	-	-		30.52	-		-	NA	-
702	Fromage non affiné au lait cru de vache	Raw milk cheese	st	-	st	st	-	IIC/IIC*/IIC**/IIC***/IIC***		36.97/35.41*/34.21**/33.13***/33.46***	-		/	/	-
703	Fromage non affiné au lait cru	Raw milk cheese	-	-	st	st	-	IIC/IIC*/IIC**/_***		33.46/35.04*/33.50**/31.13***	-		-	NA	-
704	Gouda	Cheese	st	st	H-	+	-	IIC/*		32.37/30.63*	-		-	NA	-
705	Chou chantilly	Dessert (Chantilly)	st	st	st	-	-	-		30.58	-		-	NA	-
706	Millefeuille	Dessert	st	st	st	st	-	-		29.88	st		-	NA	-

DAIRY PRODUCTS															
Sample N°	Product (French name)	Product (English name)	Reference method: EN ISO 11290-1/A1 ♦					Alternative method: <i>mericon</i> ® Manual <i>Listeria monocytogenes</i> Detection							
								24h ± 2h at 30°C ± 1°C							Reference method on ONE Broth <i>Listeria</i>
								<i>mericon Listeria monocytogenes</i> PCR result			Confirmations		<i>Listeria monocytogenes</i>		
											O&A (100µl)		Final result Manual DNA extraction	Agreement Ref/Alt Manual	
			Manual DNA extraction (Ct value)			Typical colonies	Confirmation result								
O1	P1	O2	P2	Result L. mono-cytogenes	Result			Ct Target Channel (TC)	Ct Internal Control (IC)						
806	Glace crème brûlée	Ice cream	st	-	-	-	-	-/-		30.16/30.74	H+(1)	<i>L. monocytogenes</i>	-	NA	-
807	Glace vanille	Ice cream	st	-	H+	+	+	+/-	35.85	30.24/30.55	H+	<i>L. monocytogenes</i>	+	PA	
808	Crème glacée au caramel	Ice cream	st	st	st	-	-	-/-		29.80/29.60	H+d	-	-	NA	-
809	Fromage pasteurisé	Pasteurized cheese	st	st	st	st	-	I/IIC/IIC*/-**		34.27*/31.63**	st		-	NA	-
810	Fromage pasteurisé	Pasteurized cheese	st	-	-	-	-	-/IIC/IIC*/IIC**/_***		29.00/35.00*/32.42**/31.79***	H+	<i>L. monocytogenes</i>	-	NA	
811	Brie pasteurisé	Pasteurized cheese	st	-	-	-	-	IIC/IIC/IIC*/-**		33.64/35.05/33.42*/30.89**	-		-	NA	-
812	Choux chantilly	Dessert	st	-	-	-	-	+/+	32.17/32.51	29.81/30.12	H+	<i>L. monocytogenes</i>	+	PD	
813	Forêt noire chantilly	Dessert	H+/H-	-	H+	+	+	-/-		30.14/30.59	-		-	ND	-
814	Fraisier à la crème	Dessert	-	-	-	-	-	IIC/IIC/-*		33.16/34.66/31.29*	-		-	NA	-
1471	Lait cru	Raw milk	-	st	st	st	-	+	25.08	31.15	H+	<i>L. monocytogenes</i>	+	PD	
1670	Lait cru	Raw milk	H+	+	/	/	+	-		31.18	-		-	ND	-
1671	Lait ribot	Fermented milk	st	st	-	-	-	-		31.42	-		-	NA	-
1672	Lait cru	Raw milk	st	st	-	-	-	-		30.10	-		-	NA	-
1673	Lait fermenté	Fermented milk	st	st	-	-	-	-		30.76	-		-	NA	-
1674	Lait ribot	Fermented milk	H+	+	/	/	+	-		30.86	st		-	ND	-
1675	Gros lait	Fermented milk	st	st	st	st	-	I/IIC**/_***		32.62**/30.74***	st		-	NA	-
1676	Lait cru	Raw milk	H-	+	H-	+	-	+	28.12	28.56	H+/H-	<i>L. monocytogenes</i>	+	PD	
1850	Leerdammer pasteurisé	Pasteurised cheese	st	st	H+	+	+	+	36.05	30.99	H+	<i>L. monocytogenes</i>	+	PA	
1851	Bleu des Causses pasteurisé	Blue pasteurised cheese	st	-	-	-	-	-		30.95	-		-	NA	-
1852	Bleu pasteurisé	Blue pasteurised	H+	+	/	/	+	I/IIC**/_***	37.29/37.97**/	32.17**/31.40***	H+	<i>L. monocytogenes</i>	+	PA	

DAIRY PRODUCTS														
Sample N°	Product (French name)	Product (English name)	Reference method: EN ISO 11290-1/A1 [♦]					Alternative method: <i>mericon</i> ® Manual <i>Listeria monocytogenes</i> Detection						
								24h ± 2h at 30°C ± 1°C					Reference method on ONE Broth Listeria	
								mericon <i>Listeria monocytogenes</i> PCR result			Confirmations		<i>Listeria monocytogenes</i>	
								Manual DNA extraction (Ct value)			O&A (100µl)		Final result Manual DNA extraction	Agreement Ref/Alt Manual
			O1	P1	O2	P2	Result L. mono- cytogenes	Result	Ct Target Channel (TC)	Ct Internal Control (IC)	Typical colonies	Confirmation result		
		cheese							36.15***					
1864	Lait cru de brebis	Raw ewe milk	H+	+	/	/	+	IIC/IIC**/+***	19.42/20.32**/ 21.48***	33.66/27.92**/ 29.09***	H+	<i>L. monocytogenes</i>	+	PA
1865	Lait cru de brebis	Raw ewe milk	H+	+	/	/	+	IIC/IIC**/+***	21.49**/ 24.56***	32.61/27.83**/ 29.59***	H+	<i>L. monocytogenes</i>	+	PA
1866	Lait cru de brebis	Raw ewe milk	H+	+	/	/	+	+	24.63	31.03	H+	<i>L. monocytogenes</i>	+	PA
1867	Lait cru de brebis	Raw ewe milk	H+	+	/	/	+	+	19.02	31.57	H+	<i>L. monocytogenes</i>	+	PA
1868	Lait cru de brebis	Raw ewe milk	H+	+	/	/	+	+	21.08	30.82	H+	<i>L. monocytogenes</i>	+	PA
1869	Lait cru de brebis	Raw ewe milk	H+	+	/	/	+	IIC/+**	22.62/24.36**	34.38/28.00**	H+	<i>L. monocytogenes</i>	+	PA
7017	Chou Chantilly	Dairy based product	st	st	st	st	-	IIC*/IIC**/-		33.02/33.86/31.41				NA
7018	Verrines tiramisu	Tiramisu	-	-	-	-	-	-		30.04	-		-	NA
7019	Petit pot de glace bi goût	Ice cream	-	-	-	-	-	-		30.44	-		-	NA
7020	Crème glacée menthe chocolat	Ice cream	st	-	-	-	-	-		30.62	st		-	NA
7021	Glace abricot chocolat blanc	Ice cream	st	-	-	-	-	-		30.33	st		-	NA

MEAT PRODUCTS

Sample N°	Product (French name)	Product (English name)	Reference method: EN ISO 11290-1/A1 ♦					Alternative method: mericon® <i>Listeria monocytogenes</i>					
								24h ± 2h at 30°C ± 1°C and storage for 72h at 2-8°C					
			O1	P1	O2	P2	Result L. mono- cytogenes	mericon <i>Listeria monocytogenes</i> PCR result			Confirmations	Final result Manual DNA extraction	Agreement Ref/Alt Manual 72h
								Manual DNA extraction (Ct value)			O&A		
								Result	Ct Target Channel (TC)	Ct Internal Control (IC)			
3225	Jarret de porc	Raw pork meat	st	st	st	st	-	+(20.07)			H+	+	PD
3227	Viande de poulet	Chicken meat	H+/H-	+	H+/H-	+	+	IIC/+*	32.33/30.48*	31.73/33.13*	H+	+	PA
3228	Steack haché	Ground beef	H+/H-	+	H+/H-	+	+	+(29.36)			H+/H-	+	PA
3229	Poulet cuit	Cooked chicken	H+/H-	+	H+	+	+	-			-	-	ND
3232	Cordon bleu de dinde	Cooked turkey	H+/H-	+	H+/H-	+	+	+(23.54)			H+	+	PA
3234	Jambon de Bayonne	Dry ham	st	+(1)	H-	+	+	+(19.04)			H+	+	PA
3235	Saucisson	Cooked sausage	-	st	H+	+	+	IIC/-*	38.70/*	30.47/30.78*	-	-	ND
3236	Saucisse	Sausage	st	-	st	st	-	+(26.55)			H+(3)	+	PD
3469	Steak haché	Ground beef	H+/H-	+(1)	H+/H-	+	+	+	28.21	29.20	H+	+	PA
3470	Sauté de dinde	Raw turkey meat	H+	+	/	/	+	-		30.34	H-	-	ND
3471	Pointe de jambon	Pork meat	H+/H-	+	H+ni/H-	+	+	+	20.81	28.52	H+ni/H-	+	PA
3472	Viande de poulet congelée	Frozen poultry meat	H+/H-	+	H+	+	+	IIC/+*	30.56*	35.37/31.12*	H+	+	PA
3473	Rillettes au jambon	Ham rillettes	H+	+	/	/	+	+	23.26	28.40	H+	+	PA
3475	Mousse de canard	Duck pâté	H+	+	/	/	+	+	29.20	30.12	H+ni	+	PA
3477	Saucisse	Sausage	H-	+	H-	+	+	+	32.29	29.67	H+	+	PA
3479	Cordon bleu de dinde cuit congelé	RTRH meal(turkey)	H+/H-	+	H+/H-	+	+	+	22.86	28.16	H+/H-	+	PA
3480	Cordon bleu de dinde cuit congelé	Frozen RTRH meal (turkey)	H+(3)	+	H+	+	+	IIC/+*	33.07*	36.51/30.21*	H+	+	PA
3481	Boudin blanc aux morilles	Cooked delicatessen	H+(1)	-	H+	+	+	+	24.80	28.46	H+	+	PA
3483	Côte de porc miel moutarde citron	RTC meat (pork meat with mustard and lemon)	H+	+	H+	+	+	+	27.48	29.69	H+	+	PA
3565	Baguette flammekueche	RTRH (bacon bread)	H+	+	H+	+	+	+(27.83)	27.83		H+	+	PA
3566	Croque monsieur poulet	RTRH (chicken)	st	st	st	-	-	-			-	-	NA
3567	Escalope de dinde	Turkey escalope	H+	+	H+	+	+	-			-	-	ND
3568	Terrine de lapin	Rabbit pâté	H+	+	H+	+	+	+(21.78)	21.78		H+	+	PA

♦ Analyses performed according to the COFRAC accreditation

 ADRIA Développement
Summary Report (Version 0)

 mericon® Manual *L. monocytogenes* (QIA 36/02 - 05/17)

MEAT PRODUCTS																							
Sample N°	Product (French name)	Product (English name)	Reference method: EN ISO 11290-1/A1 [♦]					Alternative method: mericon [®] <i>Listeria monocytogenes</i>															
								24h ± 2h at 30°C ± 1°C and storage for 72h at 2-8°C															
			O1			P1			O2			P2			Result L. mono- cytogenes			mericon <i>Listeria monocytogenes</i> PCR result			Confirmations	Final result Manual DNA extraction	Agreement Ref/Alt Manual 72h
																		Manual DNA extraction (Ct value)			O&A		
			Result	Ct Target Channel (TC)	Ct Internal Control (IC)																		
549	Steak haché	Ground beef	H-	-	H-	+	-	-		31.16	H-	-	NA										
550	Filet de porc	Pork fillet	H+	+	H+	+	+	+	18.52	29.68	H+	+	PA										
551	Blanquette de poulet	Chicken stew	H+	st	H+	+	+	IIC/+*	35.38*	32.14/30.57*	H+	+	PA										
552	Allumettes de jambon	Ground ham	H-	st	H-	+	-	-		31.38	st	-	NA										
554	Cordon bleu de dinde	RTRH turkey	H+	-	H+	+	+	+	35.01	31.54	H- (Fraser 1:*)	+	PA										
555	Côte de porc miel moutarde	RTC (pork honey)	H-	-	H+	+	+	-		30.82	H-(1)	-	ND										
558	Rosette	Delicatessen	st	-	-	-	-	+	37.28	30.74	H+	+	PD										
561	Buchette pralinée	Dessert (praline)	H+	+	H+	+	+	+	20.82	30.34	H+	+	PA										
687	Escalope de dinde	Turkey	-	-	st	-	-	+/+	37.38/36.51	30.56/31.09	H+	+	PD										
688	Emincés de porc	Groung pork	H+	+	H+	+	+	+/+	19.29/19.74	28.57/28.58	H+	+	PA										
690	Steak haché	Ground beef	H+	+(2)	H+	+	+	+/+	33.86/34.36	31.07/30.20	H+	+	PA										
697	Langue de porc	Pork	H+	+	H+	+	+	+/+	19.49/20.14	28.68/29.97	H+	+	PA										
816	Viande de poulet congelée	Frozen raw chicken	H-	-	H-	+	-	IIC/+*	27.23/26.98*	33.92/30.65*	H+	+	PD										
818	Viande de poulet broyée	Ground chicken	H-	-	H-	+	-	IIC/+*	30.60/28.81*	33.54/30.60*	H+	+	PD										
821	Rillettes de canard	Delicatessen	st	-	st	-	-	+	26.18	30.26	H+	+	PD										
824	Baguette flammekueche	RTRH (bacon bread)	-	-	-	-	-	IIC/IIC*/+**	29.30/31.25*/ 29.89**	34.69/33.08*/31.84**	H+/H-	+	PD										

DAIRY PRODUCTS

Sample N°	Product (French name)	Product (English name)	Reference method: EN ISO 11290-1/A1 ♦					Alternative method: <i>mericon</i> ® Manual <i>Listeria monocytogenes</i> Detection					
								24h ± 2h at 30°C ± 1°C and storage for 72h at 2-8°C					
			O1	P1	O2	P2	Result L. mono- cytogenes	mericon <i>Listeria monocytogenes</i> PCR result			Confirmations	Final result Manual DNA extraction	Agreement Ref/Alt Manual 72h
								Manual DNA extraction (Ct value)			O&A		
								Result	Ct Target Channel (TC)	Ct Internal Control (IC)			
3237	Lait cru de brebis	Raw ewe milk	H+	st	H+	+	+	+(18.62)			H+	+	PA
3238	Lait cru de brebis	Raw ewe milk	H+	+	H-	+	-	-			H+/H-	-	NA
3239	Lait cru de brebis	Raw ewe milk	H+/H-	+	H+(1)/H-	+	-	-			-	-	NA
3242	Fromage au lait cru de vache	Raw milk cheese	H+(4)	+(1)	H+	+	+	IIC/-*		31.09	-	-	ND
3243	Fromage au lait cru de vache	Raw milk cheese	H+	+	H+	+	+	+(20.91)			H+	+	PA
3247	Fromage au lait cru de vache	Raw milk cheese	H+	+	H+	+	+	IIC/+*	23.25/18.94*	32.66/28.7*	H+	+	PA
3486	Lait cru de brebis	Ewe raw milk	H+	-	/	/	+	+	21.92	28.90	H+	+	PA
3487	Lait ribot	Fermented milk	H+	+	/	/	+	+	25.00	30.62	H+	+	PA
3488	Fromage au lait cru de vache	Raw cow milk cheese	H+	+	/	/	+	IIC/+*	22.20/19.94*	32.07/29.10*	H+	+	PA
3489	Fromage au lait cru de vache	Raw cow milk cheese	H+	+	/	/	+	+	31.33	29.44	H+	+	PA
3490	Mélange de fromages	Mix of cheeses	H+	+	/	/	+	+	29.44	30.87	H+	+	PA
3492	Lait 1/2 écrémé pasteurisé	Pasteurised half skimmed milk	st	-	-	-	-	IIC/+*	34.73/25.14*	32.15/31.36*	H+	+	PD
3493	Lait entier pasteurisé	Pasteurised milk	st	st	st	st	-	+	37.89	30.34	H+	+	PD
3494	Tiramisu à la framboise	Dairy based dessert(Tiramisu with raspberries)	st	-	H+	+	+	+	28.36	28.65	H+	+	PA
3495	Mascarpone framboise	Dairy based dessert(Mascarpone with raspberries)	st	-	-	-	-	-		29.86	H+ni/H+	-	NA
3496	Chou Chantilly	Pastry with Chantilly	H+/H-	+	/	/	+	+	25.45	29.01	H+	+	PA
562	Flan pâtissier	Dessert (flan)	H+	+	H+	+	+	+	18.68	29.60	H+	+	PA
563	Verrine fraise Chantilly	Dessert (strawberry Chantilly)	H+	+	H+	+	+	-		30.21	-	-	ND
564	Emmental râpé	Grated cheese	H+	+	H+	+	+	+	23.18	29.85	H+	+	PA
567	Fromage au lait cru de vache	Raw milk cheese	H+	-	H+	+	+	+	21.90	31.55	H+	+	PA

♦ Analyses performed according to the COFRAC accreditation

 ADRIA Développement
Summary Report (Version 0)

mericon® Manual *L. monocytogenes* (QIA 36/02 - 05/17)

DAIRY PRODUCTS

Sample N°	Product (French name)	Product (English name)	Reference method: EN ISO 11290-1/A1 ♦					Alternative method: <i>mericon</i> ® Manual <i>Listeria monocytogenes</i> Detection					
								24h ± 2h at 30°C ± 1°C and storage for 72h at 2-8°C					
			O1	P1	O2	P2	Result L. mono- cytogenes	mericon <i>Listeria monocytogenes</i> PCR result			Confirmations	Final result Manual DNA extraction	Agreement Ref/Alt Manual 72h
								Manual DNA extraction (Ct value)			O&A		
								Result	Ct Target Channel (TC)	Ct Internal Control (IC)			
806	Glace crème brûlée	Ice cream	st	-	-	-	-	-		30.39	H+	-	NA
807	Glace vanille	Ice cream	st	-	H+	+	+	IIC/IIC*/+**	34.97/36.58**	32.47/32.08*/30.26**	H+	+	PA
808	Crème glacée au caramel	Ice cream	st	st	st	-	-	IIC/-*	38.82	28.93/29.65*	st	-	NA
810	Fromage pasteurisé	Pasteurised cheese	st	-	-	-	-	-		30.25	H+	-	NA
812	Choux chantilly	Dessert	st	-	-	-	-	+	26.77	29.37	H+	+	PD
813	Forêt noire chantilly	Dessert	H+/H-	-	H+	+	+	-		30.50	-	-	ND
1471	Lait cru	Raw milk	-	st	st	st	-	+	21.73	30.74	H+	+	PD
1670	Lait cru	Raw milk	H+	+	/	/	+	-		30.59	-	-	ND
1674	Lait ribot	Fermented milk	H+	+	/	/	+	-		29.60	st	-	ND
1676	Lait cru	Raw milk	H-	+	H-	+	-	IIC/+*	25.42/28.67*	27.90/30.62*	H+	+	PD
1850	Leerdammer pasteurisé	Pasteurised cheese	st	st	H+	+	+	+	33.75	29.82	H+	+	PA
1852	Bleu pasteurisé	Blue pasteurised cheese	H+	+	/	/	+	IIC/+*	32.16/35.38*	36.40/31.47*	H+/H-	+	PA
1864	Lait cru de brebis	Raw ewe milk	H+	+	/	/	+	+	18.31	29.50	H+	+	PA
1865	Lait cru de brebis	Raw ewe milk	H+	+	/	/	+	+	18.72	29.93	H+	+	PA
1866	Lait cru de brebis	Raw ewe milk	H+	+	/	/	+	IIC/+*	21.06/22.08*	32.05/29.41*	H+	+	PA
1867	Lait cru de brebis	Raw ewe milk	H+	+	/	/	+	+	20.34	29.80	H+	+	PA
1868	Lait cru de brebis	Raw ewe milk	H+	+	/	/	+	+	19.53	29.76	H+	+	PA
1869	Lait cru de brebis	Raw ewe milk	H+	+	/	/	+	IIC/+*	18.64/18.93*	33.51/30.08/*	H+	+	PA

Appendix 5 – Relative level of detection (RLOD): raw data

Matrix: Rillettes
Strain: *Listeria monocytogenes* Ad1268

Aerobic mesophilic flora : <10 CFU/g

N° sample	Level	Contamination level (cfu/sample)	Reference method: ISO 11290-1 [♦]					Number positive samples/Total	Alternative method: <i>mericon</i> ® Manual <i>Listeria monocytogenes</i> Detection					Number positive samples/Total
			Half Fraser		Fraser		Final result		PCR Manual DNA extraction			Confirmation (O&A)	Final result	
			O&A	Palcam	O&A	Palcam			Result	Ct target	Ct IC			
1311	0	/	st	st	st	st	-	0/5	-		30.26	st	-	0/5
1312			st	st	st	st	-		-		30.34	st	-	
1313			st	st	st	st	-		-		30.35	st	-	
1314			st	st	st	st	-		-		31.09	st	-	
1315			st	st	st	st	-		-		30.72	st	-	
1375	Low	0.7	H+	+	/	/	+	10/20	+	22.89	30.19	H+	+	10/20
1376			st	st	st	st	-		IIC/-*		32.14/30.67*	st	-	
1377			st	st	st	st	-		-		30.86	st	-	
1378			H+	+	/	/	+		+	26.36	30.84	H+	+	
1379			H+	+	/	/	+		+	22.53	29.70	H+	+	
1380			H+	+	/	/	+		+	22.53	29.47	H+	+	
1381			st	st	st	st	-		+	22.03	30.02	H+	+	
1382			st	st	st	st	-		-		31.64	st	-	
1383			H+	+	/	/	+		-		31.15	st	-	
1384			H+	+	/	/	+		-		30.90	st	-	
1385			st	st	st	st	-		-		31.33	st	-	
1386			H+	+	/	/	+		-		31.16	st	-	
1387			st	st	st	st	-		-		31.36	st	-	
1388			st	st	st	st	-		-		31.46	st	-	
1389			H+	+	/	/	+		+	23.14	28.86	H+	+	
1390			st	st	st	st	-		+	21.84	29.46	H+	+	
1391			st	st	st	st	-		+	18.97	28.63	H+	+	
1392			H+	+	/	/	+		-		30.40	st	-	
1393			H+	+(3)	/	/	+		+	19.88	29.30	H+	+	
1394			st	st	st	st	-		+	20.56	29.07	H+	+	
1395	High	2	H+	+	/	/	+	5/5	+	18.64	29.5	H+	+	5/5
1396			H+	+	/	/	+		+	19.86	28.56	H+	+	
1397			H+	+	/	/	+		+	20.93	29.13	H+	+	
1398			H+	+	/	/	+		+	19.13	29.01	H+	+	
1399			H+	+	/	/	+		+	25.11	29.84	H+	+	

*: DNA extract diluted (1/10)

Matrix : Raw milk
Strain : *Listeria monocytogenes* 153

Aerobic mesophilic flora : 4,2. 10⁷ CFU/g

N° sample	Level	Contamination level (cfu/sample)	Reference method: ISO 11290-1 [♦]					Number positive samples/Total	Alternative method: <i>mericon</i> ® Manual <i>Listeria monocytogenes</i> Detection					Number positive samples/ Total
			Half Fraser		Fraser		Final result		PCR Manual DNA extraction			Confirmation (O&A)	Final result	
			O&A	Palcam	O&A	Palcam			Result	Ct target	Ct IC			
1551	0	/	st	st	st	st	-	0/5	-		30.83	-	-	0/5
1552			H-	+	H-	+	-		-		29.93	-	-	
1553			st	st	st	st	-		-		29.59	-	-	
1554			st	st	st	st	-		-		30.58	H-	-	
1555			H-	+	H-	+	-		-		30.57	-	-	
1556	Low	0.6	st	st	st	st	+	14/20	+	32.09	30.22	H+	+	11/20
1557			st	st	st	st	+		-		30.75	-	-	
1558			H+	+	/	/	+		-		29.76	-	-	
1559			st	st	st	st	-		IIC/-**		33.10/31.42**	-	-	
1560			H+	+	/	/	+		+	25.05	30.74	H+	+	
1561			st	st	st	st	-		+	25.09	29.76	H+	+	
1562			st	st	st	st	-		+	27.41	29.40	H+	+	
1563			st	st	st	st	-		-		30.11	-	-	
1564			H+	+	/	/	+		+	31.85	29.28	H+	+	
1565			H+	+	/	/	+		-		30.54	-	-	
1566			H+	+	/	/	+		+	31.84	30.05	H+	+	
1567			H+	+	/	/	+		+	30.66	29.38	H+	+	
1568			H+	+	/	/	+		+	26.83	28.97	H+	+	
1569			H+	+	/	/	+		-		29.92	-	-	
1570			st	st	st	st	-		-		31.42	-	-	
1571			st	st	st	st	-		+	27.83	29.33	H+	+	
1572			H+	+	/	/	+		-		30.49	-	-	
1573			H+	+	/	/	+		+	29.01	29.23	H+	+	
1574			H+	+	/	/	+		-		30.15	-	-	
1575			H+	+	/	/	+		+	28.08	29.34	H+	+	
1576	High	1.7	H+	+	/	/	+	3/5	+	27.51	29.66	H+	+	4/5
1577			st	st	st	st	-		+	30.49	29.51	H+	-	
1578			H+	+	/	/	+		+	25.96	28.28	H+	+	
1579			st	st	st	st	-		+	27.54	29.3	H+	+	
1580			H+	+	/	/	+		+	25.41	30.61	H+	+	

♦ Analyses performed according to the COFRAC accreditation
 ADRIA Développement
 Summary Report (Version 0)
mericon® Manual *L. monocytogenes* (QIA 36/02 - 05/17)

Appendix 6 – Inclusivity / exclusivity: raw data

INCLUSIVITY										
Strain	Species	Reference	Molecular serotypes	Origin	Inoculation level	<i>mericon</i> ® Manual <i>Listeria monocytogenes</i> Detection: ONE Broth <i>Listeria</i> 22h at 30°C				
						Manual DNA extraction			Confirmation 100 µl O&A	
						Result	Ct target	Ct IC	Typical colonies	
1.	<i>Listeria</i>	<i>monocytogenes</i>	153	VI b	Soft cheese (Munster)	39	+	19.00	28.75	H+
2.	<i>Listeria</i>	<i>monocytogenes</i>	1011/1410	II a	Frozen broccoli	28	+	20.54	28.67	H+
3.	<i>Listeria</i>	<i>monocytogenes</i>	1972/2399	VI b	Puff pastry with mushrooms	38	+	21.70	29.15	H+
4.	<i>Listeria</i>	<i>monocytogenes</i>	1973/2400	VI b	Puff pastry egg and ham (Quiche-lorraine)	36	+	18.83	29.26	H+
5.	<i>Listeria</i>	<i>monocytogenes</i>	2407/3139	IV b	Tripes with tomatoes	31	+	19.84	28.86	H+
6.	<i>Listeria</i>	<i>monocytogenes</i>	2760/3145	II a	Raw bacon	44	+	18.19	29.32	H+
7.	<i>Listeria</i>	<i>monocytogenes</i>	32.183	II b	Croque-Monsieur	31	+	20.34	29.05	H+
8.	<i>Listeria</i>	<i>monocytogenes</i>	38/181	II a	Toulouse sausages	33	+	18.04	29.33	H+
9.	<i>Listeria</i>	<i>monocytogenes</i>	5721/6179	IV b	Smoked bacon	49	+	23.56	28.88	H+
10.	<i>Listeria</i>	<i>monocytogenes</i>	7111/7516	IV b	Pâté (Rillettes)	64	+	18.48	28.99	H+
11.	<i>Listeria</i>	<i>monocytogenes</i>	850/109	II a	RTE food (deli salad with seafood)	34	+	18.37	28.96	H+
12.	<i>Listeria</i>	<i>monocytogenes</i>	877/113	II a	Environmental sample (pastry)	28	+	18.65	28.38	H+
13.	<i>Listeria</i>	<i>monocytogenes</i>	913/1048	IV b	Black pudding	39	+	22.98	28.96	H+
14.	<i>Listeria</i>	<i>monocytogenes</i>	A00C014	II a	Sausage	37	+	21.94	28.30	H+
15.	<i>Listeria</i>	<i>monocytogenes</i>	A00C022	II a	Merguez	33	+	18.32	28.75	H+
16.	<i>Listeria</i>	<i>monocytogenes</i>	A00C024	II a	Sausage	21	+	18.86	28.20	H+
17.	<i>Listeria</i>	<i>monocytogenes</i>	A00C036	II a	Poultry (guinea)	41	+	21.88	28.50	H+
18.	<i>Listeria</i>	<i>monocytogenes</i>	A00C039	II a	Sausages	20	+	18.56	28.37	H+
19.	<i>Listeria</i>	<i>monocytogenes</i>	A00C040	IV b	Cooked delicatessen (Museau)	36	+	18.99	28.40	H+
20.	<i>Listeria</i>	<i>monocytogenes</i>	A00C041	La	Sausage	38	+	18.62	28.68	H+

INCLUSIVITY										
Strain	Species	Reference	Molecular serotypes	Origin	Inoculation level	<i>mericon</i> ® Manual <i>Listeria monocytogenes</i> Detection: ONE Broth <i>Listeria</i> 22h at 30°C				
						Manual DNA extraction			Confirmation 100 µl O&A	
						Result	Ct target	Ct IC	Typical colonies	
21.	<i>Listeria</i>	<i>monocytogenes</i>	A00C042	IV b	Raw sausage	32	+	22.71	29.47	H+
22.	<i>Listeria</i>	<i>monocytogenes</i>	A00C043	II a	Smoked Bacon	50	+	18.56	28.59	H+
23.	<i>Listeria</i>	<i>monocytogenes</i>	A00C044	II b	Poultry (duck)	34	+	20.60	28.43	H+
24.	<i>Listeria</i>	<i>monocytogenes</i>	A00C052	II b	RTE food (Osso bucco with turkey)	34	+	20.86	28.65	H+
25.	<i>Listeria</i>	<i>monocytogenes</i>	A00C053	II a	Gizzards	30	+	25.19	28.90	H+
26.	<i>Listeria</i>	<i>monocytogenes</i>	A00C054	IV b	Beef hart	30	+	24.53	28.74	H+
27.	<i>Listeria</i>	<i>monocytogenes</i>	A00C055	II a	Raw sausages	43	+	23.36	29.77	H+
28.	<i>Listeria</i>	<i>monocytogenes</i>	A00E008	II a	Environmental sample	27	+	23.50	29.28	H+
29.	<i>Listeria</i>	<i>monocytogenes</i>	A00E049	II a	Environmental sample (smoked salmon)	41	+	22.11	28.89	H+
30.	<i>Listeria</i>	<i>monocytogenes</i>	A00E082	II a	Environmental sample (smoked salmon)	33	+	23.50	28.94	H+
31.	<i>Listeria</i>	<i>monocytogenes</i>	A00L097	II a	Milk	60	+	25.95	28.88	H+
32.	<i>Listeria</i>	<i>monocytogenes</i>	A00M009	II a	Smoked salmon	40	+	24.79	28.88	H+
33.	<i>Listeria</i>	<i>monocytogenes</i>	A00M032	IV b	Smoked salmon	11	+	20.47	28.61	H+
34.	<i>Listeria</i>	<i>monocytogenes</i>	A00M045	II a	Smoked salmon	62	+	21.49	28.59	H+
35.	<i>Listeria</i>	<i>monocytogenes</i>	A00M088	II a	Smoked salmon	79	+	24.13	29.67	H+
36.	<i>Listeria</i>	<i>monocytogenes</i>	Ad235	II b	Poultry	45	+	25.96	29.34	H+
37.	<i>Listeria</i>	<i>monocytogenes</i>	Ad253	II b	Hard cheese	58	+	23.70	29.15	H+
38.	<i>Listeria</i>	<i>monocytogenes</i>	Ad260	II a	Semi hard cheese	27	+	22.04	28.87	H+
39.	<i>Listeria</i>	<i>monocytogenes</i>	Ad265	II b	Tong	62	+	21.35	28.70	H+
40.	<i>Listeria</i>	<i>monocytogenes</i>	Ad266	II a	Poultry	26	+	23.09	29.33	H+
41.	<i>Listeria</i>	<i>monocytogenes</i>	Ad267	II b	Dry sausage	26	+	20.90	29.67	H+

INCLUSIVITY										
Strain	Species	Reference	Molecular serotypes	Origin	Inoculation level	<i>mericon</i> ® Manual <i>Listeria monocytogenes</i> Detection: ONE Broth <i>Listeria</i> 22h at 30°C				
						Manual DNA extraction			Confirmation 100 µl O&A	
						Result	Ct target	Ct IC	Typical colonies	
42.	<i>Listeria</i>	<i>monocytogenes</i>	Ad268	IV b	Cured ham	35	+	18.83	28.82	H+
43.	<i>Listeria</i>	<i>monocytogenes</i>	Ad270	IV b	Fermented sausage	42	+	19.26	29.17	H+
44.	<i>Listeria</i>	<i>monocytogenes</i>	Ad272	IV b	Fermented sausage	56	INV/+**	21.90/23.08**	27.93/28.81**	H+
45.	<i>Listeria</i>	<i>monocytogenes</i>	Ad273	II b	Cured delicatessen	27	+	24.86	29.26	H+
46.	<i>Listeria</i>	<i>monocytogenes</i>	Ad274	II a	Ready-to-eat food (Asiatic meal)	40	+	22.39	28.35	H+
47.	<i>Listeria</i>	<i>monocytogenes</i>	Ad534	II b	Fruits	54	+	24.02	28.48	H+
48.	<i>Listeria</i>	<i>monocytogenes</i>	Ad544	II a	Onion	43	+	20.97	28.32	H+
49.	<i>Listeria</i>	<i>monocytogenes</i>	Ad546	II a	Flour	83	+	18.82	28.19	H+
50.	<i>Listeria</i>	<i>monocytogenes</i>	Ad623	II b	Bread crumbs	50	+	19.99	29.23	H+

INV: sample control channel not in range

EXCLUSIVITY								
N°	Strain	Species	Reference	Origin	Inoculation level	<i>mericon</i> ® Manual <i>Listeria monocytogenes</i> Detection: BPW 24 h at 37° C		
						Manual DNA extraction 1/50ième		
						Result	Ct target	Ct IC
1.	<i>Bacillus</i>	<i>cereus</i>	Ad 465	Salmon Terrine	7.2 10 ⁴	-	/	30.48
2.	<i>Bacillus</i>	<i>coagulans</i>	Ad 731	Dairy product	1.4 10 ⁴	-	/	30.08
3.	<i>Bacillus</i>	<i>licheniformis</i>	Ad 978	Dairy product	1.6 10 ⁴	-	/	30.04
4.	<i>Bacillus</i>	<i>mycoïdes</i>	Ad 762	Milk	5.6 10 ⁴	-	/	30.91
5.	<i>Bacillus</i>	<i>pseudomycoïdes</i>	Ad 765	Vegetables	2.0 10 ⁴	-	/	29.8
6.	<i>Bacillus</i>	<i>pumilus</i>	Ad 284	Ready-to-eat	1.7 10 ⁵	-	/	30.52
7.	<i>Bacillus</i>	<i>weihenstephanensis</i>	Ad 726	Egg product	6.8 10 ⁴	-	/	31.06
8.	<i>Brochothrix</i>	<i>thermosphacta</i>	EN 15129	Trout	8.7 10 ⁵	-	/	31.36
9.	<i>Brochotrix</i>	<i>compessis</i>	CIP 1029205	Environment	9.8 10 ⁴	-	/	29.85
10.	<i>Carnobacterium</i>	<i>piscicola</i>	Ad 369	Raw milk	4.8 10 ⁵	-	/	29.64
11.	<i>Enterococcus</i>	<i>durans</i>	Ad 149	Ham	3.8 10 ⁴	-	/	31.32
12.	<i>Enterococcus</i>	<i>faecalis</i>	89L326	Soft cheese (Vacherin)	1.6 10 ⁵	-	/	30.82
13.	<i>Lactobacillus</i>	<i>curvatus</i>	Ad 380	Delicatessen	1.7 10 ⁵	-	/	30.47
14.	<i>Lactobacillus</i>	<i>fermentum</i>	Ad 482	Tomatoes juice	3.3 10 ⁶	-	/	30.72
15.	<i>Lactobacillus</i>	<i>sakei</i>	Ad 473	Ham	4.9 10 ⁵	-	/	31.65
16.	<i>Lactococcus</i>	<i>lactis cremoris</i>	Ad 137	Dairy product	2.2 10 ⁵	-	/	30.05
17.	<i>Leuconostoc</i>	<i>carnosum</i>	Ad 411	Ham	6.8 10 ⁵	-	/	29.99
18.	<i>Listeria</i>	<i>grayi</i>	Ad 1198	Smoked salmon	3.0 10 ⁵	-	/	30.21
19.	<i>Listeria</i>	<i>grayi</i>	Ad 1443	Pork	1.4 10 ⁵	-	/	30.39
20.	<i>Listeria</i>	<i>innocua</i>	Ad 658	Gorgonzola	5.9 10 ⁵	-	/	30.67
21.	<i>Listeria</i>	<i>innocua</i>	Ad655	Brine	5.0 10 ⁵	-	/	30.29
22.	<i>Listeria</i>	<i>innocua</i>	Ad660	Bread crumbs	6.2 10 ⁵	-	/	30.32

EXCLUSIVITY								
N°	Strain	Species	Reference	Origin	Inoculation level	<i>mericon</i> ® Manual <i>Listeria monocytogenes</i> Detection: BPW 24 h at 37°C		
						Manual DNA extraction 1/50ième		
						Result	Ct target	Ct IC
23.	<i>Listeria</i>	<i>ivanovii</i>	Ad466	Raw veal meat	3.3 10 ⁵	-	/	30.95
24.	<i>Listeria</i>	<i>ivanovii</i>	Ad 1290	Raw milk cheese	3.3 10 ⁵	-	/	29.93
25.	<i>Listeria</i>	<i>ivanovii</i>	Ad 1288	Sheep milk	3.0 10 ⁵	-	/	29.85
26.	<i>Listeria</i>	<i>seeligeri</i>	BR18	Environment (fish)	5.6 10 ⁵	-	/	30.55
27.	<i>Listeria</i>	<i>seeligeri</i>	Ad674	Soft cheese (Munster)	5.2 10 ⁵	-	/	30.91
28.	<i>Listeria</i>	<i>welshimeri</i>	Ad1424	Poultry	6.0 10 ⁵	-	/	31.69
29.	<i>Listeria</i>	<i>welshimeri</i>	Ad650	Poultry	6.1 10 ⁵	-	/	30.88
30.	<i>Staphylococcus</i>	<i>aureus</i>	Ad 165	Smoked delicatessen	1.3 10 ⁵	-	/	30.79

Appendix 7 - Results obtained by the collaborative laboratories and the expert laboratory

Laboratory A

Aerobic mesophilic flora: $4,7 \cdot 10^8$ /g

N°Sample	Reference method: ISO 11290-1					Alternative method: mericon Manual Listeria monocytogenes					Agreement
	Half Fraser		Fraser		Final result	Ct target	Ct IC	Test result	O&A	Final result	
	O&A	Palcam	O&A	Palcam							
A3	-	-	-	-	-	/	28.67	-	-	-	NA
A7	+	+	+	+	+	30.59	28.67	+	-	+	PA
A9	-	-	+	+	+	/	28.67	-	-	-	ND
A12	+	+	+	+	+	/	28.67	-	-	-	ND
A14	-	-	-	-	-	/	28.67	-	-	-	NA
A17	+	+	+	+	+	23.31	28.67	+	+	+	PA
A19	+	+	+	+	+	26.09	28.67	+	+	+	PA
A23	-	-	-	-	-	/	28.67	-	-	-	NA
A2	+	+	+	+	+	31.57	28.67	+	+	+	PA
A5	+	+	+	+	+	21.76	28.67	+	+	+	PA
A6	+	+	+	+	+	26.28	28.67	+	+	+	PA
A11	-	-	+	+	+	22.40	28.67	+	+	+	PA
A13	+	+	+	+	+	31.15	28.67	+	+	+	PA
A16	+	+	+	+	+	23.85	28.67	+	+	+	PA
A21	+	+	+	+	+	31.87	28.67	+	+	+	PA
A24	+	+	+	+	+	26.45	28.67	+	+	+	PA
A1	+	+	+	+	+	27.63	28.67	+	+	+	PA
A4	+	+	+	+	+	33.50	28.67	+	+	+	PA
A8	+	+	+	+	+	24.56	28.67	+	+	+	PA
A10	+	+	+	+	+	26.75	28.67	+	/	+	PA
A15	+	+	+	+	+	26.81	28.67	+	+	+	PA
A18	+	+	+	+	+	29.72	28.67	+	+	+	PA
A20	+	+	+	+	+	28.73	28.67	+	+	+	PA
A22	+	+	+	+	+	25.78	28.67	+	+	+	PA

Laboratory BAerobic mesophilic flora: 1,5.10⁹/g

N°Sample	Reference method: ISO 11290-1					Alternative method: mericon Manual <i>Listeria monocytogenes</i>					Agreement
	Half Fraser		Fraser		Final result	Ct target	Ct IC	Test result	O&A	Final result	
	O&A	Palcam	O&A	Palcam							
B3	-	-	-	-	-	/	30.89	-	-	-	NA
B7	-	-	-	-	-	/	31.48	-	-	-	NA
B9	-	-	-	-	-	/	29.01	-	-	-	NA
B12	-	-	-	-	-	/	31.39	-	-	-	NA
B14	-	-	-	-	-	/	30.85	-	-	-	NA
B17	-	-	-	-	-	/	30.58	-	-	-	NA
B19	-	-	-	-	-	/	30.42	-	-	-	NA
B23	-	-	-	-	-	/	31.69	-	-	-	NA
B2	+	+	+	+	+	25.40	28.04	+	+	+	PA
B5	+	+	+	+	+	38.68	34.59	+	+	+	PA
B6	+	+	+	+	+	22.76	30.08	+	+	+	PA
B11	+	-	+	+	+	/	31.77	-	-	-	ND
B13	+	+	+	+	+	25.12	29.46	+	+	+	PA
B16	+	+	+	+	+	23.41	28.87	+	+	+	PA
B21	-	-	-	-	+	32.87	30.73	+	+	+	PA
B24	+	+	+	+	+	22.46	28.55	+	+	+	PA
B1	+	+	+	+	+	30.19	29.11	+	+	+	PA
B4	+	+	+	+	+	25.85	28.98	+	+	+	PA
B8	+	+	+	+	+	23.79	31.02	+	+	+	PA
B10	+	+	+	+	+	21.73	28.90	+	+	+	PA
B15	+	+	+	+	+	22.28	28.63	+	+	+	PA
B18	+	+	+	+	+	21.41	28.45	+	+	+	PA
B20	+	+	+	+	+	26.63	31.06	+	+	+	PA
B22	+	+	+	+	+	27.61	29.15	+	+	+	PA

Laboratory C1
Aerobic mesophilic flora:
2,1.10⁹/g

N°Sample	Reference method: ISO 11290-1					Alternative method: mericon Manual Listeria monocytogenes					Agreement
	Half Fraser		Fraser		Final result	Ct target	Ct IC	Test result	O&A	Final result	
	O&A	Palcam	O&A	Palcam							
C3	-	-	-	-	-	/	29.52	-	-	-	NA
C7	-	-	-	-	-	/	29.14	-	-	-	NA
C9	-	-	-	-	-	/	30.81	-	-	-	NA
C12	-	-	-	-	-	/	31.19	-	-	-	NA
C14	-	-	-	-	-	/	30.56	-	-	-	NA
C17	-	-	-	-	-	/	35.16	-	-	-	NA
C19	-	-	-	-	-	/	34.71	-	-	-	NA
C23	-	-	-	-	-	/	29.45	-	-	-	NA
C2	-	-	+	+	+	/	30.37	-	-	-	ND
C5	+	+	+	+	+	27.84	28.03	+	+	+	PA
C6	+	+	+	+	+	29.04	28.75	+	+	+	PA
C11	-	-	+	+	+	28.99	31.60	+	+	+	PA
C13	+	+	+	+	+	30.02	28.76	+	+	+	PA
C16	+	+	+	+	+	29.30	28.54	+	+	+	PA
C21	+	+	+	+	+	/	35.26	-	-	-	ND
C24	-	-	+	+	+	26.25	28.57	+	+	+	PA
C1	+	+	+	+	+	28.91	30.19	+	+	+	PA
C4	+	+	+	+	+	27.22	29.64	+	+	+	PA
C8	+	-	+	+	+	28.46	28.42	+	+	+	PA
C10	+	+	+	+	+	26.76	31.19	+	+	+	PA
C15	+	+	+	+	+	27.29	28.05	+	+	+	PA
C18	+	+	+	+	+	28.78	31.24	+	+	+	PA
C20	+	+	+	+	+	25.62	28.16	+	+	+	PA
C22	+	+	+	+	+	24.74	28.15	+	+	+	PA

Laboratory C2Aerobic mesophilic flora: 1,6.10⁹/g

N°Sample	Reference method: ISO 11290-1					Alternative method: mericon Manual <i>Listeria monocytogenes</i>					Agreement
	Half Fraser		Fraser		Final result	Ct target	Ct IC	Test result	O&A	Final result	
	O&A	Palcam	O&A	Palcam							
C25	-	-	-	-	-	/	30.46	-	-	-	NA
C28	-	-	-	-	-	/	28.86	-	-	-	NA
C30	-	-	-	-	-	/	29.50	-	-	-	NA
C35	-	-	-	-	-	/	29.79	-	-	-	NA
C37	-	-	-	-	-	/	30.51	-	-	-	NA
C40	-	-	-	-	-	/	29.75	-	-	-	NA
C45	-	-	-	-	-	/	31.66	-	-	-	NA
C48	-	-	-	-	-	/	29.12	-	-	-	NA
C26	+	+	+	+	+	35.33	30.74	+	+	+	PA
C29	+	+	+	+	+	29.84	29.08	+	+	+	PA
C32	+	+	+	+	+	33.30	29.80	+	+	+	PA
C34	-	-	+	+	+	29.33	28.73	+	+	+	PA
C39	+	+	+	+	+	26.89	29.19	+	+	+	PA
C41	+	+	+	+	+	27.20	29.31	+	+	+	PA
C44	-	-	+	+	+	29.58	29.44	+	+	+	PA
C46	+	+	+	+	+	29.72	29.01	+	+	+	PA
C27	+	+	+	+	+	28.06	29.04	+	+	+	PA
C31	+	+	+	+	+	29.71	29.17	+	+	+	PA
C33	+	+	+	+	+	27.06	29.88	+	+	+	PA
C36	+	+	+	+	+	26.76	31.17	+	+	+	PA
C38	+	+	+	+	+	25.72	28.01	+	+	+	PA
C42	+	+	+	+	+	26.30	28.75	+	+	+	PA
C43	+	+	+	+	+	27.27	29.51	+	+	+	PA
C47	+	+	+	+	+	25.41	28.75	+	+	+	PA

Laboratory C3Aerobic mesophilic flora: 8,7.10⁶/g

N°Sample	Reference method: ISO 11290-1					Alternative method: mericon Manual <i>Listeria monocytogenes</i>					Agreement
	Half Fraser		Fraser		Final result	Ct target	Ct IC	Test result	O&A	Final result	
	O&A	Palcam	O&A	Palcam							
C53	-	-	-	-	-	/	29.74	-	-	-	NA
C56	-	-	-	-	-	/	30.05	-	-	-	NA
C58	-	-	-	-	-	/	31.56	-	-	-	NA
C60	-	-	-	-	-	/	30.13	-	-	-	NA
C63	-	-	-	-	-	/	31.83	-	-	-	NA
C67	-	-	-	-	-	/	29.08	-	-	-	NA
C69	-	-	-	-	-	/	29.12	-	-	-	NA
C71	-	-	-	-	-	/	30.32	-	-	-	NA
C49	-	-	+	+	+	28.43	29.56	+	+	+	PA
C51	+	+	+	+	+	28.96	30.85	+	+	+	PA
C54	-	-	+	+	+	28.44	29.58	+	+	+	PA
C57	+	+	+	+	+	/	29.54	-	-	-	ND
C61	+	+	+	+	+	28.23	28.52	+	+	+	PA
C65	+	+	+	+	+	29.79	27.73	+	+	+	PA
C68	+	+	+	+	+	27.67	28.25	+	+	+	PA
C72	-	-	+	+	+	/	29.42	-	+	-	ND
C50	+	+	+	+	+	27.96	29.67	+	+	+	PA
C52	+	+	+	+	+	25.73	28.82	+	+	+	PA
C55	+	+	+	+	+	25.53	30.76	+	+	+	PA
C59	+	+	+	+	+	25.17	31.19	+	+	+	PA
C62	+	+	+	+	+	27.14	28.46	+	+	+	PA
C64	+	+	+	+	+	26.42	28.39	+	+	+	PA
C66	+	+	+	+	+	26.44	29.07	+	+	+	PA
C70	+	+	+	+	+	25.34	29.28	+	+	+	PA

Laboratory E1Aerobic mesophilic flora: $9,5 \cdot 10^8$ /g

N°Sample	Reference method: ISO 11290-1					Alternative method: mericon Manual <i>Listeria monocytogenes</i>					Agreement
	Half Fraser		Fraser		Final result	Ct target	Ct IC	Test result	O&A	Final result	
	O&A	Palcam	O&A	Palcam							
E3	-	-	-	-	-	/	30.29	-	-	-	NA
E7	-	-	-	-	-	/	30.17	-	-	-	NA
E9	-	-	-	-	-	/	30.02	-	-	-	NA
E12	-	-	-	-	-	/	29.26	-	-	-	NA
E14	-	-	-	-	-	/	31.54	-	-	-	NA
E17	-	-	-	-	-	/	29.50	-	-	-	NA
E19	-	-	-	-	-	/	29.44	-	-	-	NA
E23	-	-	-	-	-	/	30.95	-	-	-	NA
E2	-	-	-	-	-	21.82	28.44	+	+	+	PD
E5	+	+	+	+	+	22.53	28.41	+	+	+	PA
E6	+	+	+	+	+	23.04	30.19	+	+	+	PA
E11	+	+	+	+	+	26.68	29.78	+	+	+	PA
E13	+	+	+	+	+	22.25	28.91	+	+	+	PA
E16	+	+	+	+	+	23.11	28.36	+	+	+	PA
E21	-	-	-	-	-	21.46	28.61	+	+	+	PD
E24	+	+	+	+	+	/	31.21	-	-	-	ND
E1	+	+	+	+	+	21.06	29.04	+	+	+	PA
E4	+	+	+	+	+	21.05	28.93	+	+	+	PA
E8	+	+	+	+	+	20.52	28.42	+	+	+	PA
E10	+	+	+	+	+	26.15	31.39	+	+	+	PA
E15	+	+	+	+	+	21.42	28.36	+	+	+	PA
E18	+	+	+	+	+	20.58	28.37	+	+	+	PA
E20	+	+	+	+	+	20.49	28.10	+	+	+	PA
E22	+	+	+	+	+	21.50	29.24	+	+	+	PA

Laboratory E2Aerobic mesophilic flora: 1,5.10⁹/g

N°Sample	Reference method: ISO 11290-1					Alternative method: mericon Manual <i>Listeria monocytogenes</i>					Agreement
	Half Fraser		Fraser		Final result	Ct target	Ct IC	Test result	O&A	Final result	
	O&A	Palcam	O&A	Palcam							
E25	-	-	-	-	-	/	30.61	-	-	-	NA
E28	-	-	-	-	-	/	29.76	-	-	-	NA
E30	-	-	-	-	-	/	31.70	-	-	-	NA
E35	-	-	-	-	-	/	30.63	-	-	-	NA
E37	-	-	-	-	-	/	29.95	-	-	-	NA
E40	-	-	-	-	-	/	29.42	-	-	-	NA
E45	-	-	-	-	-	/	29.74	-	-	-	NA
E48	-	-	-	-	-	/	30.22	-	-	-	NA
E26	+	-	+	+	+	27.61	30.10	+	+	+	PA
E29	-	-	+	+	+	22.78	29.26	+	+	+	PA
E32	-	-	+	+	+	25.06	30.12	+	+	+	PA
E34	+	-	+	+	+	22.42	28.55	+	+	+	PA
E39	+	-	+	+	+	20.96	28.86	+	+	+	PA
E41	+	-	+	+	+	/	31.75	-	-	-	ND
E44	+	-	+	+	+	25.32	29.04	+	+	+	PA
E46	-	-	+	+	+	22.36	29.11	+	+	+	PA
E27	+	-	+	+	+	20.86	29.32	+	+	+	PA
E31	+	+	+	+	+	20.85	28.62	+	+	+	PA
E33	+	+	+	+	+	22.90	28.27	+	+	+	PA
E36	+	+	+	+	+	22.94	29.07	+	+	+	PA
E38	+	+	+	+	+	23.27	28.86	+	+	+	PA
E42	-	-	+	+	+	22.30	28.93	+	+	+	PA
E43	+	+	+	+	+	20.35	29.04	+	+	+	PA
E47	+	+	+	+	+	22.03	29.86	+	+	+	PA

Laboratory **F**
Aerobic mesophilic flora: $4,0 \cdot 10^7$ /g

N°Sample	Reference method: ISO 11290-1					Alternative method: mericon Manual <i>Listeria monocytogenes</i>					Agreement
	Half Fraser		Fraser		Final result	Ct target	Ct IC	Test result	O&A	Final result	
	O&A	Palcam	O&A	Palcam							
F3	-	-	-	-	-	/	31.67	-	-	-	NA
F7	-	-	-	-	-	/	31.61	-	-	-	NA
F9	-	-	-	-	-	/	32.17	-	-	-	NA
F12	-	-	-	-	-	/	32.13	-	-	-	NA
F14	-	-	-	-	-	/	32.06	-	-	-	NA
F17	-	-	-	-	-	/	33.06	-	-	-	NA
F19	-	-	-	-	-	/	31.75	-	-	-	NA
F23	-	-	-	-	-	/	33.75	-	-	-	NA
F2	+	+	+	+	+	26.36	31.78	+	+	+	PA
F5	+	+	+	+	+	/	33.15	-	-	-	ND
F6	+	+	+	+	+	29.96	32.27	+	+	+	PA
F11	+	+	+	+	+	27.41	31.34	+	+	+	PA
F13	+	+	+	+	+	28.29	32.02	+	+	+	PA
F16	+	-	+	+	+	27.21	29.98	+	+	+	PA
F21	-	-	-	-	-	/	33.24	-	-	-	NA
F24	+	-	+	+	+	24.68	31.42	+	+	+	PA
F1	+	+	+	+	+	29.73	31.78	+	+	+	PA
F4	+	+	+	+	+	28.30	31.99	+	+	+	PA
F8	+	+	+	+	+	26.38	32.04	+	+	+	PA
F10	+	+	+	+	+	25.59	31.55	+	+	+	PA
F15	-	+	+	+	+	25.89	31.47	+	+	+	PA
F18	+	+	+	+	+	13.31	31.55	+	+	+	PA
F20	+	+	+	+	+	25.16	34.13	+	+	+	PA
F22	+	+	+	+	+	24.68	31.03	+	+	+	PA

Laboratory GAerobic mesophilic flora: $8,0 \cdot 10^8$ /g

N°Sample	Reference method: ISO 11290-1					Alternative method: mericon Manual Listeria monocytogenes						Agreement
	Half Fraser		Fraser		Final result	Ct target	Ct IC	Test result	O&A	Final result		
	O&A	Palcam	O&A	Palcam								
G3	-	-	-	-	-	/	27.87	⊗/-	-	-	NA	
G7	-	-	-	-	-	/	30.37	-	-	-	NA	
G9	-	-	-	-	-	/	28.69	-	-	-	NA	
G12	-	-	-	-	-	/	29.95	-	-	-	NA	
G14	-	-	-	-	-	/	28.67	-	-	-	NA	
G17	-	-	-	-	-	/	29.22	-	-	-	NA	
G19	-	-	-	-	-	/	29.64	-	-	-	NA	
G23	-	-	-	-	-	/	29.86	-	-	-	NA	
G2	-	-	-	-	-	32.45	29.12	+	+	+	PD	
G5	-	-	+	+	+	33.61	28.71	+	+	+	PA	
G6	+	+	+	+	+	32.63	29.06	+	+	+	PA	
G11	+	+	+	+	+	31.40	27.47	⊗/+	+	+	PA	
G13	+	+	+	+	+	34.34	29.61	+	+	+	PA	
G16	+	-	+	+	+	32.36	29.96	+	+	+	PA	
G21	+	+	+	+	+	/	29.97	-	-	-	ND	
G24	+	+	+	+	+	29.21	29.29	+	+	+	PA	
G1	+	+	+	+	+	29.32	27.88	⊗/+	+	+	PA	
G4	+	+	+	+	+	31.08	29.19	+	+	+	PA	
G8	+	+	+	+	+	30.84	29.45	+	+	+	PA	
G10	+	+	+	+	+	29.66	29.92	+	+	+	PA	
G15	+	+	+	+	+	30.90	28.53	+	+	+	PA	
G18	+	+	+	+	+	31.21	30.08	+	+	+	PA	
G20	+	+	+	+	+	31.26	28.93	+	+	+	PA	
G22	+	+	+	+	+	30.96	28.00	+	+	+	PA	

⊗: sample control channel not in range

Laboratory HAerobic mesophilic flora: 2,3 10⁹ /g

N°Sample	Reference method: ISO 11290-1					Alternative method: mericon Manual Listeria monocytogenes					Agreement
	Half Fraser		Fraser		Final result	Ct target	Ct IC	Test result	O&A	Final result	
	O&A	Palcam	O&A	Palcam							
H3	-	-	-	-	-	/	30.30	-	-	-	NA
H7	-	-	-	-	-	/	29.17	-	-	-	NA
H9	-	-	-	-	-	/	27.71	⊗/-	-	-	NA
H12	-	-	-	-	-	/	29.16	-	-	-	NA
H14	-	-	-	-	-	/	29.67	-	-	-	NA
H17	-	-	-	-	-	/	29.88	-	-	-	NA
H19	-	-	-	-	-	/	30.07	-	-	-	NA
H23	-	-	-	-	-	/	29.04	-	-	-	NA
H2	+	-	+	+	+	34.51	29.51	+	+	+	PA
H5	+	+	+	+	+	/34.47/34.94	28.88/28.85/29.86	-/+ / +	+	-	ND
H6	+	+	+	+	+	31.60	29.18	+	+	+	PA
H11	+	-	+	+	+	31.06	28.86	+	+	+	PA
H13	+	-	+	+	+	32.79	29.71	+	+	+	PA
H16	-	-	-	-	-	32.06	28.63	+	+	+	PD
H21	-	+	+	+	+	33.78	29.79	+	+	+	PA
H24	-	-	+	+	+	34.16	28.54	+	+	+	PA
H1	+	+	+	+	+	29.42	29.89	+	+	+	PA
H4	+	+	+	+	+	37.64	29.08	+	+	+	PA
H8	+	+	+	+	+	34.75	29.90	+	+	+	PA
H10	+	+	+	+	+	28.75	27.75	⊗/+	+	+	PA
H15	+	+	+	+	+	31.71	29.56	+	+	+	PA
H18	+	+	+	+	+	31.07	29.31	+	+	+	PA
H20	+	+	+	+	+	31.82	28.66	+	+	+	PA
H22	+	+	+	+	+	32.08	28.36	+	+	+	PA

⊗ : sample control channel not in range

Laboratory IAerobic mesophilic flora: $2,4 \cdot 10^8$ /g

N°Sample	Reference method: ISO 11290-1					Alternative method: mericon Manual Listeria monocytogenes					Agreement
	Half Fraser		Fraser		Final result	Ct target	Ct IC	Test result	O&A	Final result	
	O&A	Palcam	O&A	Palcam							
I3	-	-	-	-	-	/	31.21	-	-	-	NA
I7	-	+/-*	-	-	-	/	30.88	-	-	-	NA
I9	-	-	-	-	-	/	30.93	-	-	-	NA
I12	-	-	-	-	-	/	29.90	-	-	-	NA
I14	-	-	-	-	-	/	30.74	-	-	-	NA
I17	-	-	-	-	-	/	30.44	-	-	-	NA
I19	-	-	-	-	-	/	31.18	-	-	-	NA
I23	-	+/-*	-	-	-	/	31.26	-	-	-	NA
I2	+	+	+	+	+	29.60	29.72	+	+	+	PA
I5	+	+	+	+	+	27.57	29.54	+	+	+	PA
I6	+	+	+	+	+	31.05	30.88	+	+	+	PA
I11	+	+	+	+	+	30.05	29.74	+	+	+	PA
I13	+	+	+	+	+	27.66	30.54	+	+	+	PA
I16	+	+	+	+	+	30.40	29.45	+	+	+	PA
I21	+	+	+	+	+	/	29.58	-	-	-	ND
I24	+	+	+	+	+	30.76	30.36	+	+	+	PA
I1	+	+	+	+	+	28.03	29.28	+	+	+	PA
I4	+	+	+	+	+	28.65	28.25	+	+	+	PA
I8	+	+	+	+	+	29.82	30.60	+	+	+	PA
I10	+	+	+	+	+	29.02	29.97	+	+	+	PA
I15	+	+	+	+	+	27.66	30.34	+	+	+	PA
I18	+	+	+	+	+	31.71	31.52	+	+	+	PA
I20	+	+	+	+	+	25.87	30.16	+	+	+	PA
I22	+	+	+	+	+	31.95	31.00	+	+	+	PA

*: plates were sent to ADRIA, the colonies are not characteristic (*Bacillus*)

Laboratory JAerobic mesophilic flora: $2,1 \cdot 10^9$ /g

N°Sample	Reference method: ISO 11290-1					Alternative method: mericon Manual <i>Listeria monocytogenes</i>					Agreement
	Half Fraser		Fraser		Final result	Ct target	Ct IC	Test result	O&A	Final result	
	O&A	Palcam	O&A	Palcam							
J3	-	-	-	-	-	/	29.65	-		-	NA
J7	-	-	-	-	-	/	30.34	-		-	NA
J9	-	-	-	-	-	/	31.12	-		-	NA
J12	-	-	-	-	-	/	30.94	-		-	NA
J14	-	-	-	-	-	/	30.75	-		-	NA
J17	-	-	-	-	-	/	30.95	-		-	NA
J19	-	-	-	-	-	/	30.29	-		-	NA
J23	-	-	-	-	-	/	30.21	-		-	NA
J2	+	+	/	/	+	21.22	28.52	+	+	+	PA
J5	-	-	-	-	-	26.41	28.83	+	+	+	PD
J6	+	+	/	/	+	24.28	28.57	+	+	+	PA
J11	+	+	/	/	+	23.84	28.93	+	+	+	PA
J13	+	+	/	/	+	26.21	29.81	+	+	+	PA
J16	+	+	/	/	+	/	29.43	-		-	ND
J21	+	+	/	/	+	29.25	29.03	+	+	+	PA
J24	+	+	/	/	+	24.87	29.51	+	+	+	PA
J1	+	+	/	/	+	21.22	28.52	+	+	+	PA
J4	+	+	/	/	+	23.70	28.08	+	+	+	PA
J8	+	+	/	/	+	26.46	29.69	+	+	+	PA
J10	+	+	/	/	+	23.88	28.13	+	+	+	PA
J15	+	+	/	/	+	22.58	28.00	+	+	+	PA
J18	+	+	/	/	+	23.94	28.32	+	+	+	PA
J20	+	+	/	/	+	23.54	29.24	+	+	+	PA
J22	+	+	/	/	+	24.29	28.29	+	+	+	PA

 The confirmatory tests were not run for samples with negative PCR results.

Laboratory KAerobic mesophilic flora: $2,1 \cdot 10^9$ /g

N°Sample	Reference method: ISO 11290-1					Alternative method: mericon Manual <i>Listeria monocytogenes</i>					Agreement
	Half Fraser		Fraser		Final result	Ct target	Ct IC	Test result	O&A	Final result	
	O&A	Palcam	O&A	Palcam							
K3	-	-	-	-	-	/	29.87	-	-	-	NA
K7	-	-	-	-	-	/	29.36	-	-	-	NA
K9	-	-	-	-	-	/	29.31	-	-	-	NA
K12	-	-	-	-	-	/	29.66	-	-	-	NA
K14	-	-	-	-	-	/	28.71	-	-	-	NA
K17	-	-	-	-	-	/	29.12	-	-	-	NA
K19	-	-	-	-	-	/	28.73	-	-	-	NA
K23	-	-	-	-	-	/	28.46	-	-	-	NA
K2	+	+	+	+	+	31.73	28.83	+	+	+	PA
K5	+	+	+	+	+	34.62	28.40	+	+	+	PA
K6	+	+	+	+	+	31.80	28.96	+	+	+	PA
K11	+	+	+	+	+	33.71	28.72	+	+	+	PA
K13	+	+	+	+	+	30.41	28.75	+	+	+	PA
K16	+	+	+	+	+	33.11	30.02	+	+	+	PA
K21	-	-	-	-	-	/	30.05	-	-	-	NA
K24	+	+	+	+	+	32.56	28.11	+	+	+	PA
K1	+	+	+	+	+	34.38	28.72	+	+	+	PA
K4	+	+	+	+	+	37.91	29.20	+	+	+	PA
K8	+	+	+	+	+	31.06	26.65	+	+	+	PA
K10	+	+	+	+	+	29.13	29.31	+	+	+	PA
K15	+	+	+	+	+	30.84	28.52	+	+	+	PA
K18	+	+	+	+	+	29.86	28.95	+	+	+	PA
K20	+	+	+	+	+	29.09	28.20	+	+	+	PA
K22	+	+	+	+	+	29.93	28.85	+	+	+	PA

Laboratory L
Aerobic mesophilic flora: 4,0 10⁸/g

ADRIA

N°Sample	Reference method: ISO 11290-1 [♦]					Alternative method: mericon Manual Listeria monocytogenes					Agreement
	Half Fraser		Fraser		Final result	Ct target	Ct IC	Test result	O&A	Final result	
	O&A	Palcam	O&A	Palcam							
L3	-	-	-	-	-	/	30.50	-	-	-	NA
L7	-	-	-	-	-	/	27.56	⊗/-	-	-	NA
L9	-	-	-	-	-	/	30.16	-	-	-	NA
L12	-	-	-	-	-	/	30.51	-	-	-	NA
L14	-	-	-	-	-	/	29.73	-	-	-	NA
L17	-	-	-	-	-	/	30.13	-	-	-	NA
L19	-	-	-	-	-	/	30.87	-	-	-	NA
L23	-	-	-	-	-	/	28.71	-	-	-	NA
L2	H+	+	H+	+	+	30.85	29.58	+	H+	+	PA
L5	H+	+	H+	+	+	-	30.57	-		-	ND
L6	H+	+	H+	+	+	29.12	29.77	+	H+	+	PA
L11	H+	+	H+	+	+	29.79	28.65	+	H+	+	PA
L13	H+	+	H+	+	+	29.33	29.35	+	H+	+	PA
L16	-	-	-	-	-	31.54	29.71	+	H+	+	PD
L21	H+	+	H+	+	+	/	30.43	-	-	-	ND
L24	H+	+	H+	+	+	/	29.90	-	-	-	ND
L1	H+	+	H+	+	+	27.13	30.63	+	H+	+	PA
L4	H+	+	H+	+	+	26.92	27.54	⊗/+	H+	+	PA
L8	H+	+	H+	+	+	27.33	28.01	+	H+	+	PA
L10	H+	+	H+	+	+	28.65	29.69	+	H+	+	PA
L15	H+	+	H+	+	+	29.11	28.82	+	H+	+	PA
L18	H+	+	H+	+	+	27.11	29.73	+	H+	+	PA
L20	H+	+	H+	+	+	29.08	29.46	+	H+	+	PA
L22	H+	+	H+	+	+	28.16	28.20	+	H+	+	PA

⊗: sample control channel not in range