NF VALIDATION
Validation of alternative analysis methods
Application to the food industry

Summary report
according to the standard EN ISO 16140-2:2016

Qualitative method

One Broth One Plate for Listeria (OBOP-L)
(certificate # NEO 35/05-07/16)
for the detection of *Listeria* spp in human food products and in environmental samples

Expert laboratory: MICROSEPT
ZA de la Sablonnière
15 rue Denis Papin
49220 LE LION D'ANGERS
FRANCE

For: NEOGEN
The Dairy School, Auchincruive
Ayr, KA6 5HU
Scotland, UK

This report contains 88 pages, including 56 pages of appendices.
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Preamble

- **Protocols of validation :**

- **EN ISO 16140-1 and EN ISO 16140-2 (September 2016): Microbiology of the food chain — Method validation**
  Part 1: Vocabulary.
  Part 2: Protocol for the validation of alternative (proprietary) methods against a reference method.

- **Requirements regarding comparison and interlaboratory studies for implementation of the standard EN ISO 16140-2 (version 6).**

- **Reference method:**

- **EN ISO 11290-1 (July 2017):** Microbiology of the food chain - Horizontal method for the detection and enumeration of *Listeria monocytogenes* and of *Listeria* spp- Part 1: Detection method.

- **Application scope:**

- **All human food products** by a validation testing of a broad range of foods, including:
  - meat products,
  - milk and dairy products,
  - fish and seafood,
  - vegetables,
  - composite foods,
- **Environmental samples.**

- **Certification body:**

- **AFNOR Certification** (https://nf-validation.afnor.org/).

Definitions

- **Method comparison study**

The method comparison study is the part of the validation process that is performed in the organizing laboratory. It consists of three parts namely the following:
- A comparative study of the results of the reference method to the results of the alternative method in (naturally and/or artificially) contaminated samples (so-called sensitivity study);
- A comparative study to determine the relative level of detection (RLOD) in artificially contaminated samples (so-called RLOD study);
- An inclusivity/exclusivity study of the alternative method.

  - **Sensitivity study**

The sensitivity study aims to determine the difference in sensitivity between the reference and the alternative method.
The sensitivity is the ability of the reference method or alternative method to detect the analyte.

  - **Relative level of detection study**

A comparative study is conducted to evaluate the level of detection (LOD) of the alternative method against the reference method. The evaluation is based on the calculation of the relative level of detection (RLOD).
The level of detection at 50% (LOD_{50}) is the measured analyte concentration, obtained by a given measurement procedure, for which the probability of detection is 50%.
The relative level of detection level of detection at P = 0,50 (LOD_{50}) of the alternative method divided by the level of detection at P = 0,50 (LOD_{50}) of the reference method.

  - **Inclusivity and exclusivity study**

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

- **Interlaboratory study**

The interlaboratory 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.
The aim of the interlaboratory study is to determine the difference in sensitivity between the reference and the alternative method when tested by different collaborators using identical samples (reproducibility conditions).

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Appendices

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Appendix B: Protocol of the reference method
Appendix C: Artificial contaminations
Appendix D: Results of the sensitivity study
Appendix E: Results of the relative level of detection study
Appendix F: Results of the selectivity study
Appendix G: Results of the interlaboratory study

1. Introduction

The present document introduces the results of the studies for the validation according to the ISO 16140-2 standard of the ONE Broth One Plate for *Listeria* method (OBOP-L), formerly called LESS Plus method, for the detection of *Listeria* spp, as part of its NF Validation certification.

The OBOP-L method is certified NF Validation according to the ISO 16140-2:2016 standard under the certification number NEO 35/05-07/16 for the detection of *Listeria* spp in a broad range of foods and in environmental samples.

Table 1 summarizes the different steps of the validation that occurred since the initial validation.

Table 1: validation history

Date	Study	Expert Laboratory	Standards
July 2016	Initial validation for the detection of *Listeria* spp	ADRIA Développement	- ISO/FDIS 16140-2:2015 - ISO 11290-1/A1:2005
March 2020	Renewal study without modification	Microsept	- ISO 16140-2:2016 - ISO 11290-1:2017

The results set out in this report were produced during validation tests carried out by ADRIA Développement as part of NF Validation, in accordance with prevailing requirements.

2. Protocols of the methods

2.1. Alternative method

2.1.1. Principle of the alternative method

The method utilises Neogen's proprietary LESS Plus broth for the enrichment steps as this provides high recovery of *Listeria* species in foods and environmental samples.
The enrichment is followed by a detection using *Listeria* Chromogenic Agar (according to the formulation of Ottaviani and Agosti), a selective medium for the isolation and presumptive identification of *Listeria* spp and *Listeria monocytogenes* from foodstuffs and related materials as described in ISO 11290-1:2017 or Palcam.

2.1.2. Protocol of the alternative method

The validated protocol is as follows:

- Enrichment step in LESS Plus broth for 25±3 h at 30±1°C
- Streaking of 100 µl of enriched broth onto Ottaviani and Agosti (O&A) or Palcam agar media,
- Incubation of the plates at 37±1°C
- Reading of the plates after 24 to 48 h. It is not necessary to prolong the incubation to 48 h for the plates screened at 24 h whatever the result of the screening, except for Palcam needing 48 h for a final reading,
- Confirmation tests as described in the ISO 11290-1:2017 method.

The protocol of the method is set out in Appendix A.

2.2. Reference method

Assays of the initial validation for the general protocol were performed according to the EN ISO 11290-1/A1:2005 standard "Horizontal method for the detection and enumeration of *Listeria monocytogenes* - Part 1: Detection method".
This standard was updated in 2017, that's why the method described in the new standard EN ISO 11290-1:2017 "Horizontal method for the detection and enumeration of *Listeria monocytogenes* and of *Listeria* spp – Part 1: detection method" will be considered as the reference method as part of the current renewal study performed by the Laboratory Microsept.

Further explanations regarding this update are provided in paragraph 9.2.
The analytical scheme of the reference method is presented in Appendix B.

2.3. Restriction

There is no restriction on use for the OBOP-L method for the detection of *Listeria* spp.

2.4. Study design

As there is no shared enrichment step for both the alternative and the reference methods, different test portions coming from the same batch or lot of product have to be used for the two methods. The study thus provides unpaired data and the expression "unpaired study" is used to describe the study design.

3. Method comparison study

3.1. Sensitivity study

3.1.1. Number and nature of samples

449 samples contaminated and non-contaminated with *Listeria* spp were tested using both:

- the reference method and,
- the OBOP-L method for the detection of *Listeria spp*.

The different kinds of samples analyzed are presented in table 2.

Table 2: Number and nature of samples analyzed for all categories ([1] : positive by any method)

Category		Type	Number of positive results[1]	Number of negative results	Total
Composite foods ❶	a	Ready-to-eat	9	13	22
	b	Ready-to-reheat	16	14	30
	c	Confectionaries, pastries and egg products	8	23	31
	Total		**33**	**50**	**83**
Meat products ❷	a	Raw products (frozen or fresh)	19	9	28
	b	Meat based products ready to reheat	7	14	21
	c	Raw and cooked delicatessen	9	13	22
	Total		**35**	**36**	**71**
Milk & dairy products ❸	a	Raw milk cheeses	10	24	34
	b	Other products based on raw milks	11	13	24
	c	Heat treated dairy products	10	17	27
	Total		**31**	**54**	**85**
Vegetables ❹	a	Raw products (fresh and frozen)	11	12	23
	b	Pre-cooked vegetables, vegetables under modified atmosphere	9	12	21
	c	RTE	11	10	21
	Total		**31**	**34**	**65**
Fish and seafood ❺	a	Raw products (fresh and frozen)	8	13	21
	b	Cured & smoked	11	9	20
	c	Ready-to-eat, Ready to reheat	13	16	29
	Total		**32**	**38**	**70**
Environmental samples ❻	a	Process & cleaning waters	11	13	24
	b	Dusts and residus	8	12	20
	c	Surface sampling	11	20	31
		Total	**30**	**45**	**75**
TOTAL			**192**	**257**	**449**

The distribution per target analyte is given in table 3.

Table 3: Distribution per target analyte

Category	***Listeria* spp**	***Listeria* spp + *Listeria monocytogenes***	***Listeria monocytogenes***
Composite foods	9	0	24
Meat products	11	11	13
Milk and dairy products	12	1	18
Vegetables	20	2	9
Fish and seafood	3	12	17
Environmental samples	9	4	17
TOTAL	64	30	98

3.1.2. Artificial contamination of samples

Artificial contamination was carried out using stressed strains in accordance with the requirements of the ISO 16140-2:2016 standard and of the requirements of the AFNOR Validation Technical Board linked to this standard.

A total of 110 samples were artificially contaminated, using 57 different strains:

- 88 gave a positive result, among which:
  - 73 samples were inoculated at a level ≤ 3 CFU / test portion,
  - 15 samples were inoculated between 3,2 and 6,6 CFU / test portion.

The samples and the strains used for the artificial contaminations are presented in Appendix C.

In total, 104 positive results out of 192 were obtained from naturally contaminated samples, i.e. 54,2%.

3.1.3. Confirmation protocols

The typical colonies were identified by the tests described in the reference method.

The LESS Plus broths of negative samples of the alternative method were subcultured in Fraser broth incubated for 48 h at 37°C prior streaking onto O&A and Palcam plates, in order to verify the presence of *Listeria* spp in the enrichment broths.

3.1.4. Results

Raw data are shown in Appendix D.

Table 4 shows the results for the two methods.

Table 4: results of the sensitivity study for both methods (R+/-: reference method positive or negative, A+/-: alternative method positive or negative, PA: positive agreement, NA: negative agreement, ND: negative deviation, PD: positive deviation, PP: presumptive positive before confirmation)

Category	Response	Ottaviani & Agosti		Palcam	
		R+	R-	R+	R-
Composite foods ❶	A+	PA = 18	PD = 8	PA = 18	PD = 7
	A-	ND = 7 incl. 0 PPND	NA = 50 incl. 1 PPNA	ND = 7 incl. 0 PPND	NA = 51 incl. 0 PPNA
Meat products ❷	A+	PA = 25	PD = 9	PA = 25	PD = 8
	A-	ND = 1 incl. 0 PPND	NA = 36 incl. 0 PPNA	ND = 1 incl. 0 PPND	NA = 37 incl. 0 PPNA
Milk and dairy products ❸	A+	PA = 16	PD = 8	PA = 16	PD = 8
	A-	ND = 7 incl. 0 PPND	NA = 54 incl. 2 PPNA	ND = 7 incl. 0 PPND	NA = 54 incl. 0 PPNA
Vegetables ❹	A+	PA = 16	PD = 8	PA = 17	PD = 8
	A-	ND = 7 incl. 0 PPND	NA = 34 incl. 1 PPNA	ND = 6 incl. 0 PPND	NA = 34 incl. 0 PPNA
Fish and seafood ❺	A+	PA = 26	PD = 3	PA = 26	PD = 4
	A-	ND = 2 incl. 0 PPND	NA = 39 incl. 0 PPNA	ND = 2 incl. 0 PPND	NA = 38 incl. 0 PPNA
Environmental samples ❻	A+	PA = 18	PD = 5	PA = 18	PD = 5
	A-	ND = 7 incl. 0 PPND	NA = 45 incl. 0 PPNA	ND = 7 incl. 0 PPND	NA = 45 incl. 0 PPNA
All categories	A+	**PA = 119**	**PD = 41**	**PA = 120**	**PD = 40**
	A-	**ND = 31 incl. 0 PPND**	**NA = 257 incl. 4 PPNA**	**ND = 30 incl. 0 PPND**	**NA = 259 incl. 0 PPNA**

3.1.5. Calculation of relative accuracy (AC), relative sensitivity (SE) and false positive ratio (FP)

All results were used to calculate the sensitivity for the alternative method and the reference method, the relative trueness and the false positive ratio.

Table 5 presents the results for the Ottaviani and Agosti agar media and table 6 the results for the Palcam agar media.

Table 5: values in % of sensitivity compared to OAA, relative trueness and false positive ratio for the alternative method (SE_{alt}: sensitivity for the alternative method, SE_{ref}: sensitivity for the reference method, RT: relative trueness, FPR: false positive ratio for the alternative method)

Category		Type	PA	NA	PD	ND	PPND	PPNA	SE_{alt} %	SE_{ref} %	AC %	FP %
Composite foods ❶	a	Ready-to-eat	2	13	5	2	0	0	77.8	44.4	68.2	0.0
	b	Ready-to-reheat	10	14	3	3	0	0	81.3	81.3	80.0	0.0
	c	Confectionaries, pastries and egg products	6	23	0	2	0	1	75.0	100.0	93.5	4.5
	Total		**18**	**50**	**8**	**7**	**0**	**1**	**78.8**	**75.8**	**81.9**	**2.0**
Meat products ❷	a	Raw products (frozen or fresh)	15	9	3	1	0	0	94.7	84.2	85.7	0.0
	b	Meat based products ready to reheat	5	14	2	0	0	0	100.0	71.4	90.5	0.0
	c	Raw and cooked delicatessen	5	13	4	0	0	0	100.0	55.6	81.8	0.0
	Total		**25**	**36**	**9**	**1**	**0**	**0**	**97.1**	**74.3**	**85.9**	**0.0**
Milk & Dairy products ❸	a	Raw milk cheeses	3	24	4	3	0	2	70.0	60.0	79.4	9.1
	b	Other products based on raw milks	8	13	1	2	0	0	81.8	90.9	87.5	0.0
	c	Heat treated dairy products	5	17	3	2	0	0	80.0	70.0	81.5	0.0
	Total		**16**	**54**	**8**	**7**	**0**	**2**	**77.4**	**74.2**	**82.4**	**3.7**
Vegetables ❹	a	Raw products (fresh and frozen)	6	12	2	3	0	1	72.7	81.8	78.3	9.1
	b	Pre-cooked vegetables, vegetables under modified atmosphere	4	12	3	2	0	0	77.8	66.7	76.2	0.0
	c	RTE	6	10	3	2	0	0	81.8	72.7	76.2	0.0
	Total		**16**	**34**	**8**	**7**	**0**	**1**	**77.4**	**74.2**	**76.9**	**2.9**
Fish and seafood ❺	a	Raw products (fresh and frozen)	6	13	1	1	0	0	87.5	87.5	90.5	0.0
	b	Cured & smoked	10	10	0	0	0	0	100.0	100.0	100.0	0.0
	c	Ready-to-eat, Ready to reheat	10	16	2	1	0	0	92.3	84.6	89.7	0.0
	Total		**26**	**39**	**3**	**2**	**0**	**0**	**93.5**	**90.3**	**92.9**	**0.0**
Environmental samples ❻	a	Process & cleaning waters	8	13	2	1	0	0	90.9	81.8	87.5	0.0
	b	Dusts and residus	5	12	1	2	0	0	75.0	87.5	85.0	0.0
	c	Surface sampling	5	20	2	4	0	0	63.6	81.8	80.6	0.0
	Total		**18**	**45**	**5**	**7**	**0**	**0**	**76.7**	**83.3**	**84.0**	**0.0**
Total			**119**	**254**	**41**	**31**	**0**	**4**	**83.8**	**78.5**	**84.0**	**1.6**

Table 6: values in % of sensitivity compared to Palcam, relative trueness and false positive ratio for the alternative method (SE_{alt}: sensitivity for the alternative method, SE_{ref}: sensitivity for the reference method, RT: relative trueness, FPR: false positive ratio for the alternative method)

Category		Type	PA	NA	PD	ND	PPND	PPNA	SE_{alt} %	SE_{ref} %	AC %	FP %
Composite foods ❶	a	Ready-to-eat	2	14	4	2	0	0	75.0	50.0	72.7	0.0
	b	Ready-to-reheat	10	14	3	3	0	0	81.3	81.3	80.0	0.0
	c	Confectionaries, pastries and egg products	6	23	0	2	0	0	75.0	100.0	93.5	0.0
	Total		**18**	**51**	**7**	**7**	**0**	**0**	**78.1**	**78.1**	**83.1**	**0.0**
Meat products ❷	a	Raw products (frozen or fresh)	15	9	3	1	0	0	94.7	84.2	85.7	0.0
	b	Meat based products ready to reheat	5	14	2	0	0	0	100.0	71.4	90.5	0.0
	c	Raw and cooked delicatessen	5	14	3	0	0	0	100.0	62.5	86.4	0.0
	Total		**25**	**37**	**8**	**1**	**0**	**0**	**97.1**	**76.5**	**87.3**	**0.0**
Milk & Dairy products ❸	a	Raw milk cheeses	3	24	4	3	0	0	70.0	60.0	79.4	0.0
	b	Other products based on raw milks	8	13	1	2	0	0	81.8	90.9	87.5	0.0
	c	Heat treated dairy products	5	17	3	2	0	0	80.0	70.0	81.5	0.0
	Total		**16**	**54**	**8**	**7**	**0**	**0**	**77.4**	**74.2**	**82.4**	**0.0**
Vegetables ❹	a	Raw products (fresh and frozen)	7	12	2	2	0	0	81.8	81.8	82.6	0.0
	b	Pre-cooked vegetables, vegetables under modified atmosphere	4	12	3	2	0	0	77.8	66.7	76.2	0.0
	c	RTE	6	10	3	2	0	0	81.8	72.7	76.2	0.0
	Total		**17**	**34**	**8**	**6**	**0**	**0**	**80.6**	**74.2**	**78.5**	**0.0**
Fish and seafood ❺	a	Raw products (fresh and frozen)	6	13	1	1	0	0	87.5	87.5	90.5	0.0
	b	Cured & smoked	10	9	1	0	0	0	100.0	90.9	95.0	0.0
	c	Ready-to-eat, Ready to reheat	10	16	2	1	0	0	92.3	84.6	89.7	0.0
	Total		**26**	**38**	**4**	**2**	**0**	**0**	**93.8**	**87.5**	**91.4**	**0.0**
Environmental samples ❻	a	Process & cleaning waters	8	13	2	1	0	0	90.9	81.8	87.5	0.0
	b	Dusts and residus	5	12	1	2	0	0	75.0	87.5	85.0	0.0
	c	Surface sampling	5	20	2	4	0	0	63.6	81.8	80.6	0.0
	Total		**18**	**45**	**5**	**7**	**0**	**0**	**76.7**	**83.3**	**84.0**	**0.0**
Total			**120**	**259**	**40**	**30**	**0**	**0**	**84.2**	**78.9**	**84.4**	**0.0**

Table 7 summarizes the calculated parameters for all categories per kind of samples.

Table 7: parameters for all categories per kind of agar media (ND=ND+PPND, NA=NA+PPNA)

Parameter	Formula EN ISO 16140-2 :2016	Value OAA	Value Palcam
Sensitivity of the alternative method (SE_{alt})	$SE_{alt} = \frac{(PA + PD)}{(PA + ND + PD)} \times 100\ \%$	**83.8 %**	**84.2 %**
Sensitivity of the reference method (SE_{ref})	$SE_{ref} = \frac{(PA + ND)}{(PA + ND + PD)} \times 100\ \%$	**78.5 %**	**78.9 %**
Relative trueness (RT)	$RT = \frac{(PA + NA)}{N} \times 100\ \%$	**84.0 %**	**84.4 %**
False positive ratio (FPR) False positive results are the sum of PPNA and PPND	$FPR = \frac{FP}{NA} \times 100\ \%$	**1.6 %**	**0 %**

3.1.6. Analysis of discordant results

The distribution of the negative and positive deviations per selective agar media used and per type of contamination is summarized in table 8.

Table 8: distribution of positive and negative deviations

Contamination	Negative deviations		Positive deviations	
	O&A	Palcam	O&A	Palcam
Artificial	23	21	18	18
Natural	8	9	23	22
Total	**31**	**30**	**41**	**40**

Among the 31 negative deviations observed, a *Listeria* spp strain was recovered in the enrichment broth only in one case (sample # 4418) when using the protocol of the reference method (subculture in Fraser broth for 48 h at 37°C prior streaking onto O&A and Palcam plates).

No additional confirmation was obtained using the ISO method protocol from the LESS Plus broth from samples with negative agreement.

The number of observed deviations confirms the low level of the inoculation or natural contamination.

The negative deviations are given in table 9 and the positive deviations in table 10.

Table 9: summary of the negative deviations

#	Product	Strain	Inoculation level (cfu / sample)	O&A	Palcam	Identification	Final result O&A	Final result Palcam	Agreement O&A	Agreement Palcam	Reference method on LESS broth of the alternative method	Category	Type
1117	**RTRH (cheese ham)**	*L.monocytogenes* Ad 1197	1.0	st	st	/	-	-	**ND**	**ND**	-	1	b
3231	RTE Sandwich (tuna)			-	-	/	-	-	**ND**	**ND**	-	1	a
3441	**Pasteurized liquid yellow egg**	*L.monocytogenes* Ad 1757	1.0	st	st	/	-	-	**ND**	**ND**	-	1	c
3443	**RTRH (Pizza)**	*L.monocytogenes* Ad 1973/2400	1.6	st	-	/	-	-	**ND**	**ND**	-	1	b
3446	**RTRH (lasagnes)**	*L.monocytogenes* Ad 1218	0.8	st	st	/	-	-	**ND**	**ND**	-	1	b
4993	**Tortilla**	*L.welshimeri* Ad1270	0.8	st	st	/	-	-	**ND**	**ND**	-	1	c
5788	RTRE (salmon)			st	st	/	-	-	**ND**	**ND**	-	1	a
5533	Chicken meat			st	-	/	-	-	**ND**	**ND**	-	2	a
1979	**Panna cotta**	*L.monocytogenes* Ad 260	<1.0	st	st	/	-	-	**ND**	**ND**	-	3	c
3548	**Fermented milk**	*L.monocytogenes* Ad 1785	1.0	st	st	/	-	-	**ND**	**ND**	-	3	b
3549	**Fermented milk**	*L.monocytogenes* Ad 1781	0.6	st	st	/	-	-	**ND**	**ND**	-	3	b
4404	**Pasteurized milk cheese**	*L.seeligeri* Ad 1782	1.0	-	-	/	-	-	**ND**	**ND**	-	3	c
5000	**Raw milk cheese**	*L.seeligeri* Ad1783	2.6	-	-	/	-	-	**ND**	**ND**	-	3	a
5003	**Raw milk cheese**	*L.welshimeri* Ad1667	2.0	-	-	/	-	-	**ND**	**ND**	-	3	a
5005	**Raw milk cheese**	*L.ivanovii* Ad991	1.6	-	-	/	-	-	**ND**	**ND**	-	3	a
4415	**Spinach**	*L.innocua* Ad 1176	1.0	-	+	*L.innocua*	-	+	**ND**	**PA**		4	a
4408	**RTE (Macedoine)**	*L.seeligeri* Ad 1293	1.0	-	-	/	-	-	**ND**	**ND**	-	4	c
4413	**Mixed vegetables**	*L.grayi* Ad 1295	1.4	st	st	/	-	-	**ND**	**ND**	-	4	b
4414	**Mixed vegetables**	*L.seeligeri* Ad 1754	1.2	-	+d	*L.seeligeri*	-	+	**ND**	**PA**		4	b
4417	**Spinach**	*L.innocua* Ad 1673	1.2	-	-	/	-	-	**ND**	**ND**	-	4	a
4418	**Spinach**	*L.seeligeri* Ad 1754	1.2	-	-	/	-	-	**ND**	**ND**	+ (*L.seeligeri*)	4	a
4421	Mixed vegetables			H-	-	*L.innocua*	+	-	**PA**	**ND**		4	b
5013	**Deli salad (vegetables mix)**	*L.welshimeri* Ad1175	1.2	-	-	/	-	-	**ND**	**ND**	-	4	c
4116	Fish fillet			-	-	/	-	-	**ND**	**ND**	-	5	a
5891	RTRH (scallops)			-	-	/	-	-	**ND**	**ND**	-	5	c
3731	**Siphon water**	*L.monocytogenes* Ad 631	6.6	st	st	/	-	-	**ND**	**ND**	-	6	b
4844	Wipe (salmon industry)			st	st	/	-	-	**ND**	**ND**	-	6	c
5896	Wastes (fish industry)			-	-	/	-	-	**ND**	**ND**	-	6	b
5899	Wipe (fish industry)			-	-	/	-	-	**ND**	**ND**	-	6	c
5980	**Process water (fish industry)**	*L.monocytogenes* AOOM009	0.8	-	st	/	-	-	**ND**	**ND**	-	6	a
5985	**Wipe (fish industry)**	*L.monocytogenes* AOOM032	1.0	st	st	/	-	-	**ND**	**ND**	-	6	c
5986	**Wipe (fish industry)**	*L.monocytogenes* AOOM045	1.4	st	st	/	-	-	**ND**	**ND**	-	6	c

Table 10: summary of the positive deviations

#	Product	Strain	Inoculation level (cfu / sample)	O&A	Pal-cam	Identification	Final result O&A	Final result Palcam	Agree-ment O&A	Agree-ment Palcam	Cate-gory	Type
2903	Sandwich (bacon)			H+	+	*L.monocytogenes*	+	+	PD	PD	1	a
2904	Sandwich (ham)			H+	+	*L.monocytogenes*	+	+	PD	PD	1	a
3442	**RTRH (quiche Lorraine)**	*L.monocytogenes* Ad 1973/2400	1.6	H+	+	*L.monocytogenes*	+	+	PD	PD	1	b
3444	**RTRH (hachis parmentier)**	*L.monocytogenes* Ad 1206	0.6	H+	+	*L.monocytogenes*	+	+	PD	PD	1	b
3721	**RTRH (Pizza)**	*L.monocytogenes* Ad 1197	2.2	H+	+	*L.monocytogenes*	+	+	PD	PD	1	b
3735	**Sandwich (ham-cheese)**	*L.innocua* Ad 671	2.0	H-	+	*L.innocua*	+	+	PD	PD	1	a
3914	Sandwich (salmon)			H+(2)	-	*L.monocytogenes*	+	-	PD	NA	1	a
4600	Sandwich (tuna, tomato, egg)			H+	+	*L.monocytogenes*	+	+	PD	PD	1	a
1113	Turkey meat			H-	+	*L.innocua*	+	+	PD	PD	2	a
3236	Marinated turkey			H-d	+d	*L.welshimeri*	+	+	PD	PD	2	c
3720	**RTRH (Bourguignon)**	*L.monocytogenes* 2407/3139	1.6	H+d	+	*L.monocytogenes*	+	+	PD	PD	2	b
3795	Veal pâté			H+(1)	+(3)	*L.monocytogenes*	+	+	PD	PD	2	c
3796	Frozen pork meat			H+	+	*L.monocytogenes*	+	+	PD	PD	2	a
3802	Ham			H+	+	*L.monocytogenes*	+	+	PD	PD	2	c
3818	Pork meat			H+	+	*L.monocytogenes*	+	+	PD	PD	2	a
3912	Rillettes			H-d	-	*L.grayi*	+	-	PD	NA	2	c
4619	Turkey nuggets			H+	+	*L.monocytogenes*	+	+	PD	PD	2	b
3724	**Pasteurized cheese**	*L.monocytogenes* Ad 1784	3.2	H+	+	*L.monocytogenes*	+	+	PD	PD	3	c
3726	**Pasteurized cheese**	*L.monocytogenes* Ad 1784	3.2	H+	+	*L.monocytogenes*	+	+	PD	PD	3	c
3736	**Cheese**	*L.ivanovii* Ad 680	1.2	H+	+d	*L.ivanovii/L.innocua*	+	+	PD	PD	3	a
3739	**Pasteurized cheese**	*L.seeligeri* Ad 1782	1.8	H-	+	*L.welshimeri*	+	+	PD	PD	3	c
3832	Ewe milk			H+	+	*L.monocytogenes*	+	+	PD	PD	3	b
4997	**Raw milk cheese**	*L.innocua* Ad1789	1.6	H-	+	*L.innocua*	+	+	PD	PD	3	a
5511	Raw milk cheese			H-	+	*L.innocua*	+	+	PD	PD	3	a
6246	Raw ewe milk cheese			H+	+	*L.monocytogenes*	+	+	PD	PD	3	a
3232	RTRH vegetables			H+	+	*L.monocytogenes*	+	+	PD	PD	4	b
3691	**RTE (Coleslaw)**	*L.innocua* Ad 1676	1.8	H-	+	*L.innocua*	+	+	PD	PD	4	c
3798	Fried onions			H+	+	*L.monocytogenes*	+	+	PD	PD	4	b
3821	RTRH vegetables			H+	+	*L.monocytogenes*	+	+	PD	PD	4	b
3823	RTE (Spinach-cheese)			H+	+	*L.monocytogenes*	+	+	PD	PD	4	c
4407	**RTE (Coleslaw)**	*L.innocua* Ad 1176	1.0	H-	+	*L.innocua*	+	+	PD	PD	4	c
5008	**Frozen spinach**	*L.innocua* Ad1177	3.0	H+	+	*L.innocua*	+	+	PD	PD	4	a
5011	**Frozen RTC vegetables**	*L.welshimeri* Ad1175	1.2	H+	+	*L.welshimeri*	+	+	PD	PD	4	a
1112	**Fresh raw fish**	*L.monocytogenes* Ad 1192	1.6	H+	+	*L.monocytogenes*	+	+	PD	PD	5	a
1116	Smoked trout			-	+	*L.monocytogenes*	-	+	NA	PD	5	b
3233	RTRH (fish)			H+	+	*L.monocytogenes*	+	+	PD	PD	5	c

#	Product	Strain	Inoculation level (cfu / sample)	O&A	Pal-cam	Identification	Final result O&A	Final result Palcam	Agree-ment O&A	Agree-ment Palcam	Cate-gory	Type
5890	RTC (salmon)			H+	+	*L.monocytogenes*	+	+	**PD**	**PD**	5	c
3692	**Wipe**	*L.innocua* Ad 1677	3.0	H-	+	*L.innocua*	+	+	**PD**	**PD**	6	c
4631	Wastes (salmon)			H-	+	*L.innocua*	+	+	**PD**	**PD**	6	b
4842	Wipe (salmon industry)			H+	+	*L.monocytogenes*	+	+	**PD**	**PD**	6	c
5982	**Process water (fish industry)**	*L.monocytogenes* AOOM045	1.4	H+	+	*L.monocytogenes*	+	+	**PD**	**PD**	6	a
5983	**Process water (fish industry)**	*L.monocytogenes* AOOM088	1.0	H+	+	*L.monocytogenes*	+	+	**PD**	**PD**	6	a

During the validation study, the selective agar plates were read at 2 incubation times (i.e. 24 h and 48 h). For information, the following evolutions were observed (Table 11).

Table 11: evolution of the aspect of the Petri dishes from 24 h to 48 h of incubation

#	O&A			Agreement		Category	Type
	24 h	48 h	Confirmatory tests	24 h	48 h		
5003	-	H-	*L. welshimeri*	ND	PA	3	a
3926	st	H-	*L. seeligeri*	NA	PD	4	a
4414	-	H-	*L. seeligeri*	NA	PD	4	a

The results are also given in the raw data but the final result takes only into account the results observed after 24 h incubation time of the O&A agar media.

3.1.7. Calculation and interpretation of data

For each category and for all categories, the difference between ND and PD is calculated. The values obtained are compared to the acceptability limits defined by the ISO 16140-2:2016 standard.

Table 12 shows these results for the O&A agar media and for the Palcam agar media.

Table 12: acceptability limits

Cate-gory		Type	Values							
			O&A				Palcam			
			PD	ND	ND - PD	AL	PD	ND	ND - PD	AL
❶	a	Ready-to-eat	5	2	/	/	4	2	/	/
	b	Ready-to-reheat	3	3			3	3		
	c	Confectionaries, pastries and egg products	0	2			0	2		
	Total		**8**	**7**	**-1**	**3**	**7**	**7**	**0**	**3**
❷	a	Raw products (frozen or fresh)	3	1	/	/	3	1	/	/
	b	Meat based products ready to reheat	2	0			2	0		
	c	Raw and cooked delicatessen	4	0			3	0		
	Total		**9**	**1**	**-8**	**3**	**8**	**1**	**-7**	**3**
❸	a	Raw milk cheeses	4	3	/	/	4	3	/	/
	b	Other products based on raw milks	1	2			1	2		
	c	Heat treated dairy products	3	2			3	2		
	Total		**8**	**7**	**-1**	**3**	**8**	**7**	**-1**	**3**
❹	a	Raw products (fresh and frozen)	2	3	/	/	2	2	/	/
	b	Pre-cooked vegetables, vegetables under modified atmosphere	3	2			3	2		
	c	RTE	3	2			3	2		
	Total		**8**	**7**	**-1**	**3**	**8**	**6**	**-2**	**3**
❺	a	Raw products (fresh and frozen)	1	1	/	/	1	1	/	/
	b	Cured & smoked	0	0			1	0		
	c	Ready-to-eat, Ready to reheat	2	1			2	1		
	Total		**3**	**2**	**-1**	**3**	**4**	**2**	**-2**	**3**
❻	a	Process & cleaning waters	2	1	/	/	2	1	/	/
	b	Dusts and residus	1	2			1	2		
	c	Surface sampling	2	4			2	4		
	Total		**5**	**7**	**2**	**3**	**5**	**7**	**2**	**3**
Total			**41**	**31**	**-10**	**6**	**40**	**30**	**-10**	**6**

The observed values are below the acceptability limits for each category and for the combined categories, regardless the selective agar media tested.
The alternative method produces results comparable to the reference method.

3.1.8. Enrichment broth storage at 2 - 8°C for 72 h

A stability study of the enriched broths stored at 5±3°C for 72 hours was performed on all positive and discordant samples. After storage, the broths were reanalyzed and confirmed: 214 enrichment broths we re-tested.

The following changes are observed (cf. tables 13 and 14).

Table 13: results modifications after storage of the broth at 2-8°C for O&A

Sample number	O&A	
	Before LESS Plus Broth storage	After LESS Plus Broth storage
3549	ND	PA
3739	PD	NA
3795	PD	NA
3924	PA	ND
4414	ND	PA
4415	ND	PA

Table 14: results modifications after storage of the broth at 2-8°C for Palcam

Sample number	Palcam	
	Before LESS Plus Broth storage	After LESS Plus Broth storage
1116	PD	NA
3549	ND	PA
3795	PD	NA
3914	NA	PD
3919	PA	ND
3926	NA	PD
4421	ND	PA
4615	PA	ND
4851	NA	PD

Table 15 shows the differences between ND and PD and the acceptability limits after storage.

Table 15: acceptability limits after storage of the enriched broths

Cate-gory		Type	Values							
			O&A				Palcam			
			PD	ND	ND - PD	AL	PD	ND	ND - PD	AL
❶	a	Ready-to-eat	5	2	/	/	5	2	/	/
	b	Ready-to-reheat	3	3			3	3		
	c	Confectionaries, pastries and egg products	0	2			0	2		
	Total		**8**	**7**	**-1**	**3**	**8**	**7**	**-1**	**3**
❷	a	Raw products (frozen or fresh)	3	1	/	/	3	1	/	/
	b	Meat based products ready to reheat	2	0			2	0		
	c	Raw and cooked delicatessen	3	0			2	1		
	Total		**8**	**1**	**-7**	**3**	**7**	**2**	**-5**	**3**
❸	a	Raw milk cheeses	4	3	/	/	4	3	/	/
	b	Other products based on raw milks	1	1			1	1		
	c	Heat treated dairy products	2	2			3	2		
	Total		**7**	**6**	**-1**	**3**	**8**	**6**	**-2**	**3**
❹	a	Raw products (fresh and frozen)	2	2	/	/	3	2	/	/
	b	Pre-cooked vegetables, vegetables under modified atmosphere	3	2			3	1		
	c	RTE	3	2			3	2		
	Total		**8**	**6**	**-2**	**3**	**9**	**5**	**-4**	**3**
❺	a	Raw products (fresh and frozen)	1	1	/	/	1	1	/	/
	b	Cured & smoked	0	0			0	1		
	c	Ready-to-eat, Ready to reheat	2	1			2	1		
	Total		**3**	**2**	**-1**	**3**	**3**	**3**	**0**	**3**
❻	a	Process & cleaning waters	2	1	/	/	3	1	/	/
	b	Dusts and residus	1	2			1	2		
	c	Surface sampling	2	4			2	4		
	Total		**5**	**7**	**2**	**3**	**6**	**7**	**1**	**3**
Total			**39**	**29**	**-10**	**6**	**41**	**30**	**-11**	**6**

The observed values are below the acceptability limits for each category and for the combined categories, regardless the selective agar media tested.

The alternative method produces results comparable to the reference method.

3.1.9. Confirmation

A summary of the differences observed between streaking onto O&A agar and PALCAM plates is given in Table 16.

Table 16: Differences observed between streaking onto O&A agar and Palcam plates

Sample n°	O&A agar	Palcam	Strains isolated
1116	st	+	*L. monocytogenes*
3912	H- d	-	*L. grayi*
3914	H+ (2)	-	*L. monocytogenes*
4414	-	+d	*L. seeligeri*
4415	-	+	*L. innocua*
4421	H-	-	*L. innocua*
5890	st	+	*L. monocytogenes*

In 4 cases, typical colonies were observed only on Palcam plates and in 3 cases, they were observed only on O&A plates.

3.2. Relative level of detection study

3.2.1. Experimental design

Six matrix-strain pairs were analyzed by the reference method and by the alternative method (See Table 17).

Three levels of contamination were prepared consisting of a negative control level, a low level, and a higher level. Only one strain of the target analyte was used to contaminate the low and the high level.
The negative control level shall not produce positive results. Five replicates are tested for this level.
The low level shall be the theoretical detection level, it has been contaminated at 0.7 - 1 CFU per test portion to obtain fractional recovery results. Twenty replicates are tested for this level.
The higher level shall be just above the theoretical detection level, it has been contaminated at 2 - 3 CFU per test portion. Five replicates are tested for this level.

Food samples were contaminated using the seeding protocol. Bulk contaminations were performed on the matrix for the different levels of contamination, then the matrix was stored at 4°C for 48 hours before analysis.

An enumeration of the mesophilic aerobic flora was performed on the matrices, as well as a detection of *Listeria* using the ISO 11290-1/A1 standard method to check the absence of *Listeria* spp in the matrices.

Table 17: couples matrix-strain used for the determination of the RLOD of the method

Matrix	Strain	Origin
Composite foods: **Deli-salad (Piemontese salad)**	*Listeria seeligeri* Ad 1293	Parsley
Meat products: **Rillettes**	*Listeria monocytogenes* Ad 669	Rillettes
Milk and Dairy products **Raw milk cheese (Brie)**	*Listeria innocua* Ad 636	Cheese
Vegetables: **Ready-to-cook vegetables**	*Listeria monocytogenes* Ad 279	Ready-to-cook vegetables
Fish and seafood: **Smoked salmon**	*Listeria welshimeri* Ad 1669	Fish
Environmental samples: **Process water**	*Listeria monocytogenes* Ad 551	Environmental sample

3.2.2. Results and calculation of the RLODs

Raw results are shown in Appendix E. The RLOD is defined as the ratio of the LODs of the alternative method and the reference method: RLOD= LOD_{alt} / LOD_{ref}.

The RLODs calculations were performed according to the standard ISO 16140-2: 2016 using the Excel spreadsheet available for download at http://standards.iso.org/iso/16140. Values of the RLODs are presented in table 18.

Table 18: RLODs values (RLOD: the estimated relative level of detection value, RLODU: the upper limit of the 95% confidence interval for RLOD, RLODL: the lower limit of the 95% confidence interval for RLOD, b=ln(RLOD): logarithm of the RLOD value, sd(b): standard deviation of b, z-Test statistic: absolute value of the test statistic of the z-Test with the null hypothesis H0: b=0, p-value: p-value of the z-Test)

Name	RLOD	RLODL	RLODU	b=ln(RLOD)	sd(b)	z-Test statistic	p-value
❶	0.8	0.3	2.1	-0.3	0.5	0.5	1.4
❷	0.8	0.3	2.3	-0.2	0.5	0.3	1.3
❸	0.3	0.1	0.8	-1.3	0.5	2.5	2.0
❹	0.6	0.2	1.6	-0.4	0.5	0.9	1.7
❺	1.2	0.4	3.3	0.2	0.5	0.3	0.8
❻	0.8	0.3	1.9	-0.2	0.4	0.5	1.4
Combined	0.7	0.5	1.0	-0.4	0.2	1.9	1.9

The LOD_{50} calculations according to Wilrich & Wilrich POD-LOD calculation program - version 9, are given in Table 19.

Table 19: LOD50% for the alternative and reference method

Matrix	Strain	LOD50% (CFU/25g) Reference method	LOD50% (CFU/25g) Alternative method
Deli-salad	*Listeria seeligeri*	0.676	0.473
Rillettes	*Listeria monocytogenes*	0.460	0.385
Raw milk cheese	*Listeria innocua*	1.574	0.444
Ready-to-cook vegetables	*Listeria monocytogenes*	0.870	0.620
Smoked salmon	*Listeria welshimeri*	1.106	1.292
Process water	*Listeria monocytogenes*	0.874	0.694
Combined results		**0.894**	**0.611**

3.2.3. Interpretation and conclusion

The RLODs values are below the acceptability limit set at 2.5, meaning that, as stated in ISO 16140-2:2016, the maximum increase in LOD of the alternative versus the reference method is not considered as relevant in consideration of the fitness for purpose of the method.

In conclusion, alternative and reference methods show similar LODs values for the detection of *Listeria* spp in the categories tested.

3.3. Inclusivity and exclusivity study

3.3.1. Test protocols

20 *L. monocytogenes* strains, 30 *Listeria* spp strains and 30 non-target strains were tested by the alternative method and by the reference method.

- **Inclusivity**

Listeria strain cultures were performed in BHI medium at 37°C. Dilutions were done in order to inoculate 10 to 100 cells/225 ml of LESS Plus broth (the LESS Plus broth was incubated for 22 h at 30°C), prior streaking onto O&A and Palcam plates.

- **Exclusivity**

Negative strain cultures were performed in BHI at 37°C. Dilutions were realized in order to inoculate 10^5 cells/ml in buffered peptone water. The broths were incubated for 22 h at 37°C prior streaking onto O&A and Palcam plates.

3.3.2. Results

Raw data are given in Appendix F.

- **Inclusivity**

The 50 target strains gave typical colonies on the selective agar media, except the 2 *Listeria grayii* strains which did not grow on Palcalm plates.

- **Exclusivity**

No typical colonies were observed on O&A and Palcam agar media among the 30 non-target tested strains.

3.3.3. Conclusion

The selectivity of the method is satisfactory

3.4. Practicability

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

- **Storage conditions, shelf-life and modalities of utilization after first use**

Upon receipt, store at 2 - 30°C. Keep container tightly closed.
Expiry applies to medium in its intact container when stored directed.

- **Common step with the reference method**

No common step.

- **Time-to-result**

Steps	Reference method	Alternative method
Negative samples		
Sampling (Half Fraser or LESS Plus broth)	Day 0	Day 0
Fraser 1	Day 1	/
Half Fraser or LESS Plus broth streaking (O1 – P1)	Day 1	Day 1
Fraser 1 streaking (O2 – P2)	Day 3	/
Reading plates (O1 – P1)	Day 2 - Day 3	Day 2 – Day 3
Reading plates (O2 – P2)	Day 4 - Day 5	/
Presumptive positive or positive results		
Sub-culture of typical colonies on TSAYE	Day 2 - Day 5	Day 2 – Day 3
Confirmatory tests	Day 3 - Day 6	Day 3 – Day 4
Results	Day 4 - Day 7	Day 4 – Day 5

4. Interlaboratory study

4.1. Organization of the study

Samples were sent to 15 laboratories. Cheese sample (Camembert, fat content: 21%, salt: 1.4 %) was inoculated with a *Listeria monocytogenes* strain.

Samples were prepared and inoculated on Monday 14 December 2015, as described below:

- BLUE LABEL: 24 blind coded samples for the detection of *Listeria* spp by the reference method (EN ISO 11290-1/A1),
- RED LABEL: 24 blind coded samples for the detection of *Listeria* spp by the alternative 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.

The targeted inoculation levels were the following:

- Level: 0 CFU/25 g,
- Level 1: 2 CFU/25 g,
- Level 2: 8 CFU/25 g.

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 shipping, the package delivery and the 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 shipping, and between 0°C – 8°C in the labs.
Collaborators and the Expert Laboratory carried out the analyses on Tuesday 15 December or Wednesday 16 December 2015 with the alternative and reference methods. The analyses by the reference method and the alternative method were performed on the same day.

The interlaboratory study instructions were sent on 24th November 2015.

4.2. Experimental parameters controls

4.2.1. Sample stability

4.2.1.1. Contamination levels before inoculation

The contamination rates and the estimated precisions are set out in the table below.

Table 20: target and real contamination levels (CFU/25 g)

Level	Samples	Theoretical target level	True level	Low limit	High limit
Level 0 L_0	4-7-9-10-13-18-23-24	0	/	/	/
Low level L_1	2-3-8-12-15-17-19-21	2	2.4	2.0	2.9
High level L_2	1-5-6-11-14-16-20-22	8	9.6	7.8	11.8

4.2.1.2. Strain stability during transport

In order to detect the presence of *Listeria spp*., the reference method was applied on five portions (25 g) before the inoculation. All the results were negative.
Three samples inoculated at a high level (100 CFU/g) were tested for enumeration after 24 h and 48 h storage. Three samples inoculated at a low level were tested for detection after 24 h and 48 h storage (See table 21).

Table 21: Listeria spp stability in the matrix

Day of analysis	***Listeria* spp. detection**		**Mesophilic aerobic**
	CFU/g	Detection/25 g	**flora (CFU/g)**
Day 0	140	+	$6.3x10^7$
	100	-	
	140	+	
Day 1	150	+	$1.0x10^8$
	90	+	
	170	-	
Day 2	170	+	$1.9x10^8$
	180	+	
	270	+	

No evolution was observed during the storage for 48 h at 2 - 8°C.

4.2.1.3. Logistic conditions

The temperatures measured at reception by the Labs, the temperatures registered by the thermo-probe, and the receipt dates are given in Table 22.

Table 22: samples temperature upon receipt (T°C: temperature in °C)

Laboratories	Probe T°C	Receipt T°C	Receipt date and time		Analysis date
A	3.0	3,3	15/12/2015	10h30	16/12/2015
B	2.0	4,0	15/12/2015	14h20	16/12/2015
C	2.5	4,2	15/12/2015	13h30	/
D	3.0	3,3	15/12/2015	10h05	15/12/2015
E	3.0	3,4	15/12/2015	09h40	15/12/2015
F	2.5	3,7	15/12/2015	11h30	16/12/2015
G	3.0	2,8	15/12/2015	16h30	15/12/2015
H	2.5	4,3	15/12/2015	13h30	/
I	3.0	6,0	15/12/2015	15h50	16/12/2015
J	*Not received*	7,8	15/12/2015	12h00	/
K	3.5	4,3	15/12/2015	10h00	16/12/2015
L	3.0	4,2	15/12/2015	14h30	/
M	2.5	3,5	15/12/2015	13h15	16/12/2015
N	2.5	3,8	16/12/2015	11h00	16/12/2015
O	3.0	6,2	15/12/2015	12h20	15/12/2015

All the samples were delivered in appropriate conditions. Temperatures during shipment and at receipt were all correct.

4.3. Results

The raw data are given in Appendix G.

4.3.1. Results obtained by the Expert Laboratory

The results obtained by the Expert Laboratory are the following (see table 23).

Table 23: Results obtained by the Expert Laboratory

Level	Reference method	Alternative method
L_0	0 / 8	0 / 8
L_1	7 / 8	8 / 8
L_2	8 / 8	8 / 8

4.3.2. Results obtained by the collaborators

- **Mesophilic aerobic flora**

The enumeration of the mesophilic aerobic flora varies from 6.5 10^6 to 4.6 10^8 CFU/g.

- **Reference method**

Table 24 presents the positive results of all collaborators

Table 24: positive results of the collaborators (P: before confirmation; CP: after confirmation)

Lab	Reference method			Alternative method					
	L_0	L_1	L_2	L_0		L_1		L_2	
	P_0	P_1	P_2	P_0	CP_0	P_1	CP_1	P_2	CP_2
A	0	6	8	0	0	7	7	8	8
B	0	7	8	0	0	7	7	8	8
C	0	8	8	0	0	7	7	8	8
D	0	8	8	0	0	8	8	8	8
E	0	7	8	0	0	7	7	8	8
F	0	7	8	0	0	7	7	8	8
G	0	8	8	0	0	8	8	8	8
H	0	7	8	0	0	8	8	8	8
I	0	7	8	0	0	6	6	8	8
J	0	4	8	0	0	7	7	8	8
K	0	6	8	1	1	8	8	8	8
L	0	8	8	0	0	6	6	8	8
M	0	6	8	1	1	8	8	8	8
N	0	7	8	0	0	7	7	8	8
O	0	7	8	0	0	7	7	8	8
Total	**0**	**103**	**120**	**2**	**2**	**108**	**108**	**120**	**120**

According to the AFNOR technical rules, it is possible to include the results from a collaborator with maximum one cross contamination at Level 0. For this study, this rule was applied.
The results from the 15 collaborators were kept for interpretation.

4.4. Interpretation of the results

4.4.1. Summary of the results

Table 25 details per method, at level 1 for which fractional positive results are obtained, the results obtained during the study.

Table 25: tests results for the two methods at level L_1

Response	Reference method positive (R+)	Reference method negative (R-)
Alternative method positive (A+)	Positive agreement PA = 94	Positive deviation PD = 14
Alternative method negative (A-)	Negative deviation ND = 9 including 0 PPND	Negative agreement NA = 3 including 0 PPNA

For Level 1, the negative deviations are listed in Table 26 and the positive deviations in Table 27.

Table 26: negative deviations

Collaborator	Sample #
B	B15
C	C17
E	E15
F	F15
I	I19
	I21
L	L3
	L19
O	O19

Table 27: positive deviations

Collaborator	Sample #
A	A17
B	B8
E	E3
F	F21
H	H17
I	I15
J	J12
	J15
	J21
K	K19
	K21
M	M8
	M12
O	O21

The difference between (ND – PD) for the level where fractional recovery was obtained (L_1) is calculated.

The observed value found for (ND – PD) shall not be higher than the acceptability limit (AL). The AL is defined as $[(ND - PD)_{max}]$ and calculated per level where fractional recovery was obtained as described below using the following three parameters:

- $(p+)_{ref} = \frac{P_x}{N_x}$, 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 laboratories;

N_x = number of samples tested at level x (*L1* or *L2*) with the reference method by all laboratories.

- $(p+)_{alt} = \frac{CP_x}{N_x}$, where

CP_x = number of samples with a confirmed positive result obtained with the alternative method at level x (*L1* or *L2*) for all laboratories;
N_x = number of samples tested at level x (*L1* or *L2*) with the alternative method by all laboratories.

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

N_x = the total number of samples tested for level x (L1 or L2) by all laboratories.

The AL is not met when the observed value is higher than the A*L*. 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 in case the AL is not met shall be stated in the study report.

In this study, fractional positive results are observed at level *L1* only. The different parameters obtained by the calculation are detailed in the table below:

Table 28: values obtained for the determination of the acceptability limit

Parameter	Value
N_x	120
$(p+)_{ref}$	0.86
$(p+)_{alt}$	0.90
Acceptability limit: AL = $(ND-PD)_{max}$	8.71
Observed value: ND-PD	-5

The value (ND-PD) is inferior to the acceptability limit, so the requirements of the standard ISO 16140-2:2016 are fulfilled.

4.4.2. Calculation of sensitivities, relative trueness and false positive ratio

Based on the data of tables24 and 25, the following parameters are calculated:

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

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

Where N- is the number of all *L0* tests.
P0 and *CP0* are the total number of false-positive results obtained with the blank samples

- Sensitivity for the alternative method: $SE_{alt} = \frac{(PA+PD)}{(PA+ND+PD)} \times 100\%$

- Sensitivity for the reference method: $SE_{ref} = \frac{(PA+ND)}{(PA+ND+PD)} \times 100\%$

- Relative trueness: $RT = \frac{(PA+NA)}{N} \times 100\%$

- False positive ratio for the alternative method: $FP = \frac{(FP)}{NA} \times 100\%$

where N is the total number of samples (NA + PA + PD + ND) and FP is false positive results.

The results are the following:

SP_{alt} = 98,3%
SP_{ref} = 100 %
SE_{alt} = 92,3%
SE_{ref} = 88,0%
RT = 80,8%
FP = 0%

4.5. Evaluation of the $LOD_{50\%}$, $LOD_{95\%}$ and RLOD

The RLOD, $LOD_{50\%}$ and $LOD_{95\%}$ are calculated using the Excel spreadsheet called RLOD_interlab-study_16140-2_AnnexF_ver1_28_28-06-2017 available at http://standards.iso.org/iso/16140.

The values for each method are presented in Table 29.

Table 29: values of LOD50% and LOD95% for reference and alternative method and value of RLOD for the alternative method (CFU/25 g)

Method	$LOD_{50\%}$	$LOD_{95\%}$	RLOD
Reference	0.80 [0.62 ; 1.02]	3.45 [2.69 ; 4.41]	0.96 [0.72 ; 1.29]
Alternative	0.77 [0.60 ; 0.99]	3.32 [2.59 ; 4.26]	

5. Conclusion

- **Methods comparison study**

The method comparison study scheme corresponds to an UNPAIRED STUDY design as the alternative and reference methods do have different enrichment procedures.

In the sensitivity study, 6 categories were tested: 5 food categories and the environmental samples. The alternative method shows 41 positive deviations (PD) when using O&A plates and 40 positive deviations when using Palcam plates. 31 negative deviations were obtained when using O&A plates and 30 negative deviations when using the Palcam plates. The (ND - PD) values are below the acceptability limits (AL) whatever the categories and as well for the 6 tested categories. The number of PD is higher that the number of ND.

The Relative Levels of Detection (RLOD) are all below the AL fixed at 2.5 for the unpaired data study whatever the matrix/strain pairs.

The inclusivity and exclusivity testing give the expected results for the 50 target strains and the 30 non-target strains.

It is possible to store the primary enrichment broth for 72 h at 2-8°C.

The negative results are available in two days and the positive results in four days.

The alternative method fulfils all the ISO 16140-2 and AFNOR technical rules requirements.

- **Interlaboratory study**

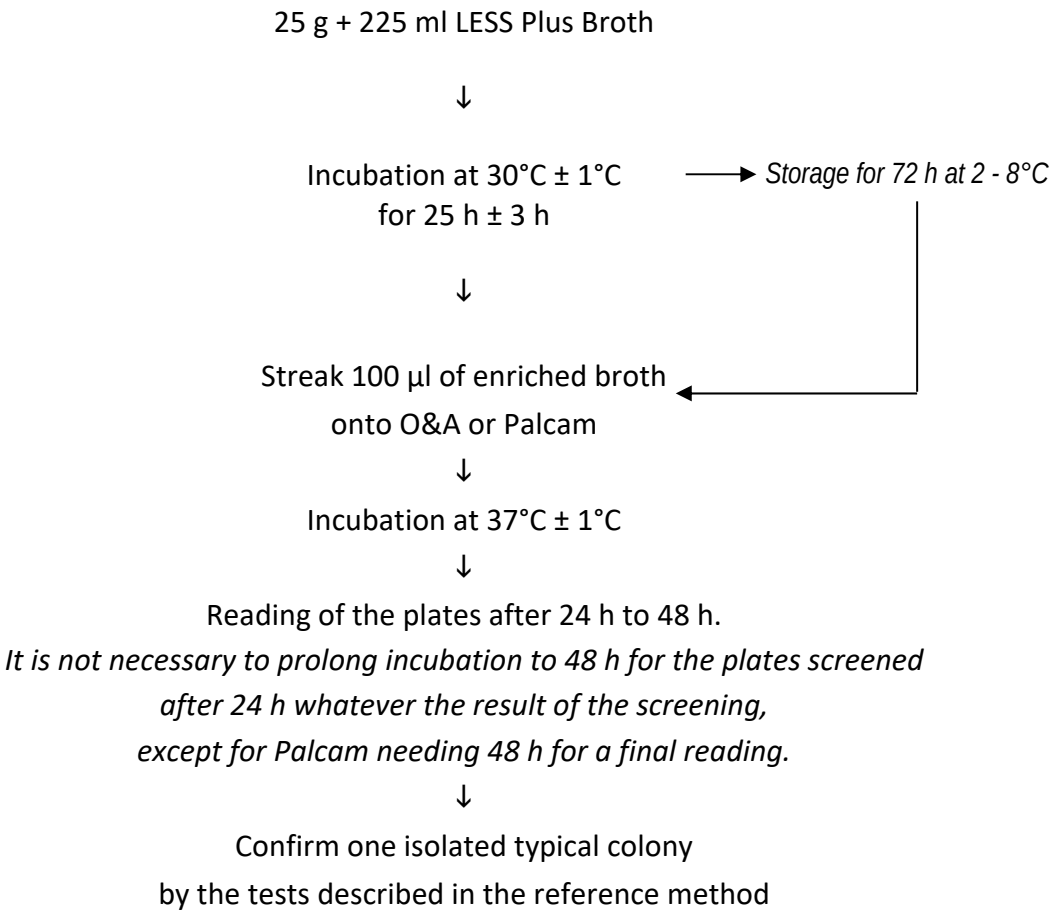
The data and interpretations comply with the ISO 16140-2:2016 requirements. The OBOP-L method is considered equivalent to the ISO standard.

Le Lion d'Angers, June 9, 2021
François Le Nestour
Head of the Microbiology Department

APPENDICES

Appendix A

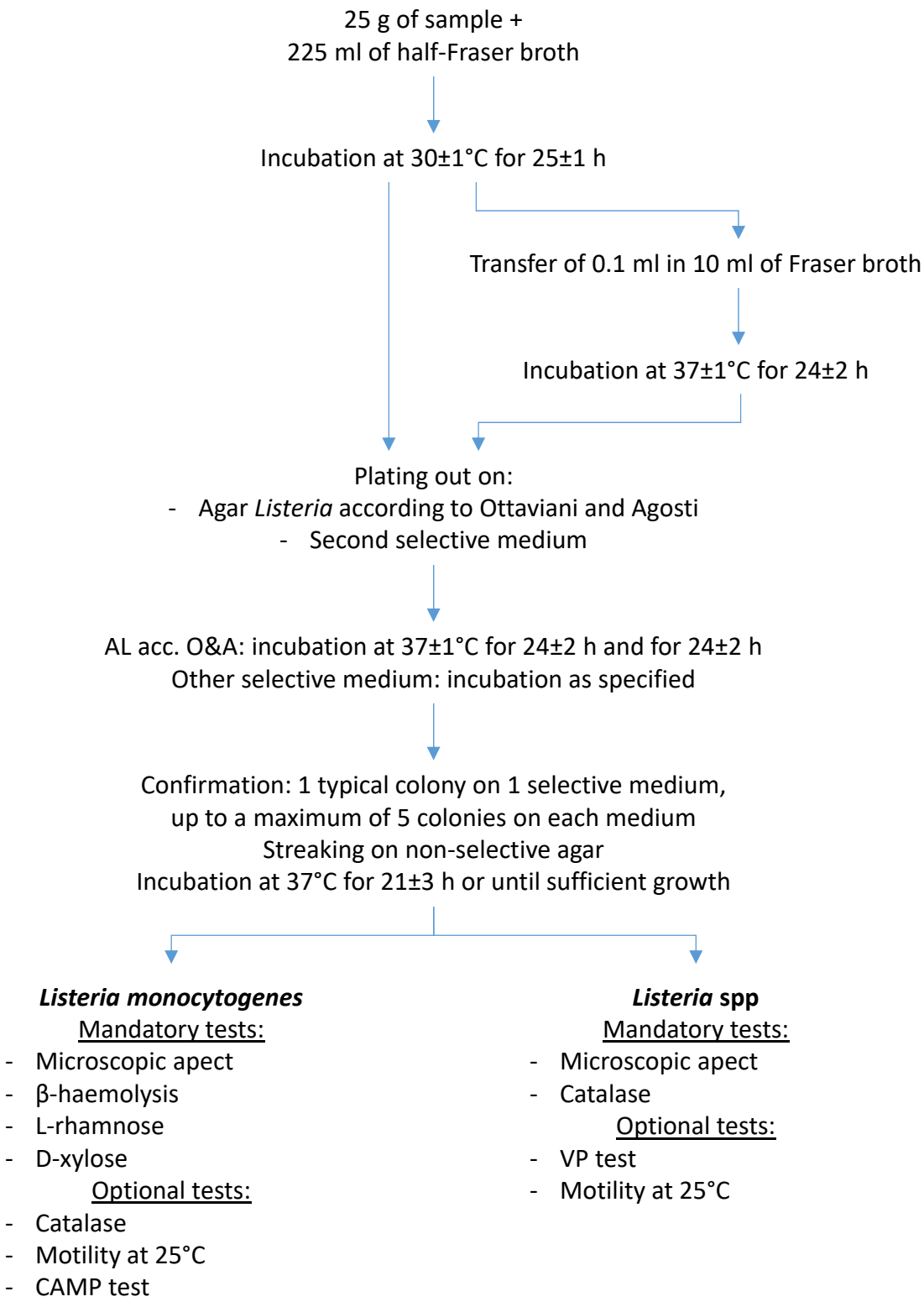
Protocol of the alternative method



During the validation study, all the negative results were confirmed by proceeding to a subculture in Fraser broth for 48 h at 37°C ± 1°C prior to streaking onto O&A and Palcam plates in order to have a total duration of incubation of the reference method (Half Fraser 24 h ± 3 h + Fraser 48 h ± 3 h).

APPENDIX B
EN ISO 11290-1:2017

Diagram of the procedure as described in the standard



Appendix C – Artificial contamination of samples

Sample number	Product (French name)	Product	Artificial contaminations				Global result
			Strain	Origin	Injury protocol	Inoculation level/25g	
1105	Piémontaise au jambon	RTE (vegetables ham)	*L.monocytogenes* Ad 1197	Pizza	Seeding-48h 2-8°C	1-0-0-2-2 (1.0)	+
1106	Rillettes de porc	Rillettes	*L.monocytogenes* Ad 645	Pork meat	Seeding-48h 2-8°C	1-2-0-1-3 (1.4)	+
1108	Terrine de saumon à l'aneth	RTE (Salmon terrine)	*L.monocytogenes* Ad 1192	Ready to teheat fish	Seeding-48h 2-8°C	0-3-0-1-4 (1.6)	+
1110	Lait ribot	Fermented milk	*L.monocytogenes* Ad 1781	Raw milk	Seeding-48h 2-8°C	2-2-1-0-2 (1.4)	+
1111	Lait entier pasteurisé	Pasteurized milk	*L.monocytogenes* Ad 1781	Raw milk	Seeding-48h 2-8°C	2-2-1-0-2 (1.4)	+
1112	Filet de lieu noir	Fresh raw fish	*L.monocytogenes* Ad 1192	Ready to teheat fish	Seeding-48h 2-8°C	0-3-0-1-4 (1.6)	+
1115	Côte de porc	Pork meat	*L.monocytogenes* Ad 645	Pork meat	Seeding-48h 2-8°C	1-2-0-1-3 (1.4)	+
1117	Croissant jambon emmental	RTRH (cheese ham)	*L.monocytogenes* Ad 1197	Pizza	Seeding-48h 2-8°C	1-0-0-2-2 (1.0)	+
1119	Carottes en rondelles	Sliced carrots	*L.monocytogenes* Ad 1238	Vegetables	Seeding-48h 2-8°C	1-2-1-1-2 (1.4)	-
1122	Jeunes pousses	Baby leaves	*L.monocytogenes* Ad 1238	Vegetables	Seeding-48h 2-8°C	1-2-1-1-2 (1.4)	+
1979	Panna cotta caramel	Panna cotta	*L.monocytogenes* Ad 260	Cheese	Seeding-48h 2-8°C	0-0-0-0-0 (<1)	+
1981	Tortilla oignons	RTRH (egg and onion)	*L.monocytogenes* Ad 544	Oignon	Seeding-48h 2-8°C	2-1-0-0-1 (0.8)	+
1982	Moussaka	RTRHG (Moussaka)	*L.monocytogenes* 711/7516	Rillettes	Seeding-48h 2-8°C	0-0-3-0-2 (1.0)	+
1983	Bacon	Bacon	*L.monocytogenes* 711/7516	Rillettes	Seeding-48h 2-8°C	0-0-3-0-2 (1.0)	+
1984	Macédoine de légumes	RTE (Macedoine)	*L.monocytogenes* 1011/1410	Brocolis	Seeding-48h 2-8°C	1-2-1-0-1 (1.0)	+
1985	Carottes râpées	RTE (Grated carrots)	*L.monocytogenes* 1011/1410	Brocolis	Seeding-48h 2-8°C	1-2-1-0-1 (1.0)	+
3440	Coule d'œuf entier liquide pasteurisé	Pasteurized liquid whole egg	*L.monocytogenes* Ad 1195	Egg product	Seeding-48h 2-8°C	0-1-1-1-1 (0.8)	-
3441	Jaune d'œuf liquide pasteurisé	Pasteurized liquid yellow egg	*L.monocytogenes* Ad 1757	Egg product	Seeding-48h 2-8°C	1-1-2-1-0 (1.0)	+
3442	Quiche Lorraine	RTRH (quiche Lorraine)	*L.monocytogenes* Ad 1973/2400	RTRH	Seeding-48h 2-8°C	3-2-0-1-2 (1.6)	+
3443	Pizza chèvre lardons	RTRH (Pizza)	*L.monocytogenes* Ad 1973/2400	RTRH	Seeding-48h 2-8°C	3-2-0-1-2 (1.6)	+
3444	Hachis Parmentier	RTRH (hachis Parmentier)	*L.monocytogenes* Ad 1206	Frozen ground beef	Seeding-48h 2-8°C	1-0-1-1-0 (0.6)	+
3445	Macaronis tomates boulettes de bœuf	RTRH (macaronis beef)	*L.monocytogenes* Ad 1206	Frozen ground beef	Seeding-48h 2-8°C	1-0-1-1-0 (0.6)	+

Sample number	Product (French name)	Product	Artificial contaminations				Global result
			Strain	Origin	Injury protocol	Inoculation level/25g	
3446	Lasagnes à la bolognaise	RTRH (lasagnes)	*L.monocytogenes* Ad 1218	Beef	Seeding-48h 2-8°C	1-1-0-0-2 (0.8)	+
3447	Bœuf bourguignon	RTRH (beef)	*L.monocytogenes* Ad 1218	Beef	Seeding-48h 2-8°C	1-1-0-0-2 (0.8)	-
3448	Crème anglaise	Custard	*L.monocytogenes* Ad 1195	Egg product	Seeding-48h 2-8°C	0-1-1-1-1 (0.8)	-
3547	Maxi Croque-monsieur	RTRH (croque-monsieur)	*L.monocytogenes* 1973/2400	RTRH	Seeding-48h 2-8°C	1-1-1-0-4 (1.4)	+
3548	Lait fermenté	Fermented milk	*L.monocytogenes* Ad 1785	Ewe milk	Seeding-48h 2-8°C	0-1-3-1-0 (1.0)	+
3549	Lait fermenté	Fermented milk	*L.monocytogenes* Ad 1781	Raw milk	Seeding-48h 2-8°C	0-1-0-1-1 (0.6)	+
3550	Lait ribot	Fermented milk	*L.monocytogenes* Ad 1201	Cheese	Seeding-48h 2-8°C	2-2-1-3-0 (1.6)	+
3551	Lait ribot fermier	Fermented milk	*L.monocytogenes* Ad 1626	Cheese	Seeding-48h 2-8°C	1-0-2-2-2 (1.4)	-
3552	Lait ribot	Fermented milk	*L.monocytogenes* Ad 611	Milk	Seeding-48h 2-8°C	0-1-1-0-1 (0.6)	-
3553	Lingette tapis ligne	Wipe	*L.monocytogenes* Ad 1679	Environment	Seeding-48h 2-8°C	1-0-1-1-0 (0.6)	-
3554	Lingette tapis ligne	Wipe	*L.monocytogenes* AOOE049	Environment	Seeding-48h 2-8°C	3-2-5-0-2 (2.4)	-
3555	Eau de rinçage laveuse	Rinse water	*L.monocytogenes* Ad 1679	Environment	Seeding-48h 2-8°C	1-0-1-1-0 (0.6)	-
3556	Eau de rinçage peleuse	Rinse water	*L.monocytogenes* AOOE049	Environment	Seeding-48h 2-8°C	3-2-5-0-2 (2.4)	+
3683	Spaghetti bolognaise	RTRH (seasoned pasta)	*L.welshimeri* Ad 1235	Seasoned meat	Seeding-48h 2-8°C	7-1-6-1-4 (3.8)	+
3684	Cordon bleu de dinde et coquillettes	RTRH (turkey)	*L.innocua* Ad 1227	Turkey meat	Seeding-48h 2-8°C	2-4-5-5-1 (3.4)	+
3685	Courgettes farcies	RTRH (zucchini-pork)	*L.welshimeri* Ad 1235	Seasoned meat	Seeding-48h 2-8°C	7-1-6-1-4 (3.8)	+
3686	Osso bucco de dinde	RTRH (turkey)	*L.innocua* Ad 1227	Turkey meat	Seeding-48h 2-8°C	2-4-5-5-1 (3.4)	+
3687	Gorgonzola	Pasteurized cheese	*L.ivanovii* Ad 1288	Ewe milk	Seeding-48h 2-8°C	1-2-3-4-2 (2.4)	-
3688	Brie	Pasteurized cheese	*L.ivanovii* Ad 1288	Ewe milk	Seeding-48h 2-8°C	1-2-3-4-2 (2.4)	+
3689	Fromage de brebis pasteurisé	Pasteurized cheese	*L.ivanovii* Ad 1288	Ewe milk	Seeding-48h 2-8°C	1-2-3-4-2 (2.4)	+
3690	Macédoine de légumes	RTE (Macedoine)	*L.innocua* Ad 1676	RTRH (cheese vegetables)	Seeding-48h 2-8°C	0-3-5-0-1 (1.8)	+
3691	Coleslaw	RTE (Coleslaw)	*L.innocua* Ad 1676	RTRH (cheese vegetables)	Seeding-48h 2-8°C	0-3-5-0-1 (1.8)	+
3692	Chiffonnette tapis de parage après désinfection	Wipe	*L.innocua* Ad 1677	Environment	Seeding-48h 2-8°C	2-2-4-6-1 (3.0)	+
3693	Chiffonnette maille sortie parage	Wipe	*L.innocua* Ad 1677	Environment	Seeding-48h 2-8°C	2-2-4-6-1 (3.0)	+
3720	Bœuf bourguignon	RTRH (Bourguignon)	*L.monocytogenes* 2407/3139	RTE	Seeding-48h 2-8°C	1-1-3-1-2 (1.6)	+
3721	Pizza jambon fromage	RTRH (Pizza)	*L.monocytogenes* Ad 1197	Pizza	Seeding-48h 2-8°C	2-4-0-2-3 (2.2)	+

Sample number	Product (French name)	Product	Artificial contaminations				Global result
			Strain	Origin	Injury protocol	Inoculation level/25g	
3724	Fromage pasteurisé de vache	Pasteurized cheese	*L.monocytogenes* Ad 1784	Raw milk cheese	Seeding-48h 2-8°C	4-4-2-4-2 (3.2)	+
3725	Brie pasteurisé	Pasteurized cheese	*L.monocytogenes* Ad 1201	Raw milk cheese	Seeding-48h 2-8°C	5-5-7-9-8 (6.8)	+
3726	Fromage pasteurisé de vache	Pasteurized cheese	*L.monocytogenes* Ad 1784	Raw milk cheese	Seeding-48h 2-8°C	4-4-2-4-2 (3.2)	+
3727	Camembert au lait pasteurisé	Pasteurized cheese	*L.monocytogenes* Ad 1201	Raw milk cheese	Seeding-48h 2-8°C	5-5-7-9-8 (6.8)	+
3728	Eau de rinçage laveuse	Rinse water	*L.monocytogenes* Ad 548	Environment	Seeding-48h 2-8°C	4-5-9-0-0 (3.6)	+
3729	Eau d'épineuse	Process water	*L.monocytogenes* Ad 548	Environment	Seeding-48h 2-8°C	4-5-9-0-0 (3.6)	+
3730	Eau de rinçage cuve PDL	Rinse water	*L.monocytogenes* Ad 631	Environment	Seeding-48h 2-8°C	7-4-6-11-15 (6.6)	+
3731	Eau de siphon laiterie	Siphon water	*L.monocytogenes* Ad 631	Environment	Seeding-48h 2-8°C	7-4-6-11-15 (6.6)	+
3732	Bœuf bourguignon	RTRH (Bourguignon)	*L.welshimeri* Ad 1223	Beef	Seeding-48h 2-8°C	2-6-6-5-4 (4.6)	-
3733	Pizza jambon-fromage	RTRH (pizza)	*L.welshimeri* Ad 1223	Beef	Seeding-48h 2-8°C	2-6-6-5-4 (4.6)	+
3734	Hachis Parmentier	RTRH (hachis Parmentier)	*L.innocua* Ad 671	Delicatessen	Seeding-48h 2-8°C	1-2-2-1-4 (2.0)	+
3735	Sandwich jambon - fromage-salade	Sandwich (ham-cheese)	*L.innocua* Ad 671	Delicatessen	Seeding-48h 2-8°C	1-2-2-1-4 (2.0)	+
3736	Leerdammer	Cheese	*L.ivanovii* Ad 680	Raw milk	Seeding-48h 2-8°C	3-0-0-1-2 (1.2)	+
3738	Fromage au lait pasteurisé	Pasteurized cheese	*L.seeligeri* Ad 1782	Raw milk	Seeding-48h 2-8°C	3-3-1-1-1 (1.8)	-
3739	Camembert au lait pasteurisé	Pasteurized cheese	*L.seeligeri* Ad 1782	Raw milk	Seeding-48h 2-8°C	3-3-1-1-1 (1.8)	+
3740	Eau de rinçage laveuse	Rinse water	*L.seeligeri* Ad 1267	Environment	Seeding-48h 2-8°C	1-1-0-0-2 (0.8)	+
3741	Eau épineuse	Process water	*L.seeligeri* Ad 1267	Environment	Seeding-48h 2-8°C	1-1-0-0-2 (0.8)	+
3742	Eau de rinçage cuve PDL	Rinse water	*L.innocua* Ad 1273	Environment	Seeding-48h 2-8°C	1-5-6-3-2 (3.4)	+
3743	Eau de siphon laiterie	Siphon water	*L.innocua* Ad 1273	Environment	Seeding-48h 2-8°C	1-5-6-3-2 (3.4)	+
4400	Tarte aux pommes	Apple pie	*L.innocua* Ad 644	Egg product	Seeding-48h 2-8°C	1-1-3-1-0 (1.2)	+
4401	Tarte amandine	Almond pie	*L.innocua* Ad 644	Egg product	Seeding-48h 2-8°C	1-1-3-1-0 (1.2)	-
4402	Tartelette fraise	Strawberry pie	*L.grayi* Ad 1490	Tart	Seeding-48h 2-8°C	2-2-2-0-1 (1.4)	-
4403	Tartelette fruit	Fruit pie	*L.grayi* Ad 1490	Tart	Seeding-48h 2-8°C	2-2-2-0-1 (1.4)	-
4404	Camembert pasteurisé	Pasteurized milk cheese	*L.seeligeri* Ad 1782	Raw milk	Seeding-48h 2-8°C	1-0-2-1-1 (1.0)	+
4405	Saint Paulin pasteurisé	Pasteurized milk cheese	*L.seeligeri* Ad 1782	Raw milk	Seeding-48h 2-8°C	1-0-2-1-1 (1.0)	-

Sample number	Product (French name)	Product	Artificial contaminations				Global result
			Strain	Origin	Injury protocol	Inoculation level/25g	
4406	Val d'Automne pasteurisé	Pasteurized milk cheese	*L.seeligeri* Ad 1782	Raw milk	Seeding-48h 2-8°C	1-0-2-1-1 (1.0)	-
4407	Coleslaw	RTE (Coleslaw)	*L.innocua* Ad 1176	Spinach	Seeding-48h 2-8°C	2-0-2-1-0 (1.0)	+
4408	Macédoine	RTE (Macedoine)	*L.seeligeri* Ad 1293	Persil	Seeding-48h 2-8°C	1-1-0-2-1 (1.0)	+
4409	Concombre à la crème	RTE cucumber	*L.grayi* Ad 1295	Spinach	Seeding-48h 2-8°C	3-2-0-2-0 (1.4)	-
4410	Céleri rémoulade	RTE (Celery)	*L.innocua* Ad 1673	Zucchini	Seeding-48h 2-8°C	0-2-3-2-0 (1.4)	+
4411	Salade 4 saveurs	Mixed salads	*L.innocua* Ad 1176	Spinach	Seeding-48h 2-8°C	2-0-2-1-0 (1.0)	-
4412	Carottes râpées fraîches	Fresh grated carrots	*L.seeligeri* Ad 1293	Persil	Seeding-48h 2-8°C	1-1-0-2-1 (1.0)	-
4413	Mélange de légumes	Mixed vegetables	*L.grayi* Ad 1295	Spinach	Seeding-48h 2-8°C	3-2-0-2-0 (1.4)	+
4414	Mélange de légumes	Mixed vegetables	*L.seeligeri* Ad 1754	Zucchini	Seeding-48h 2-8°C	1-2-0-3-0 (1.2)	+
4415	Pousses d'épinards	Spinach	*L.innocua* Ad 1176	Spinach	Seeding-48h 2-8°C	2-0-2-1-0 (1.0)	+
4416	Pousses d'épinards	Spinach	*L.grayi* Ad 1295	Spinach	Seeding-48h 2-8°C	3-2-0-2-0 (1.4)	-
4417	Pousses d'épinards	Spinach	*L.innocua* Ad 1673	Zucchini	Seeding-48h 2-8°C	0-2-3-2-0 (1.4)	+
4418	Pousses d'épinards	Spinach	*L.seeligeri* Ad 1754	Zucchini	Seeding-48h 2-8°C	1-2-0-3-0 (1.2)	+
4993	Tortilla nature	Tortilla	*L.welshimeri* Ad1270	Environment (poultry)	Seeding-48h 2-8°C	0-0-1-2-1 (0.8)	+
4994	Tortilla nature	Tortilla	*L.welshimeri* Ad1270	Environment (poultry)	Seeding-48h 2-8°C	0-0-1-2-1 (0.8)	+
4995	Tortilla oignons	Tortilla with onions	*L.innocua* Ad1277	Environment (poultry)	Seeding-48h 2-8°C	4-0-3-1-2 (2.0)	+
4996	Tortilla nature	Tortilla	*L.innocua* Ad1277	Environment (poultry)	Seeding-48h 2-8°C	4-0-3-1-2 (2.0)	+
4997	Saint Nectaire au lait cru	Raw milk cheese	*L.innocua* Ad1789	Raw milk	Seeding-48h 2-8°C	0-3-2-2-1 (1.6)	+
4998	Rocamadour au lait cru	Raw milk cheese	*L.innocua* Ad1789	Raw milk	Seeding-48h 2-8°C	0-3-2-2-1 (1.6)	+
4999	Morbier au lait cru	Raw milk cheese	*L.innocua* Ad1789	Raw milk	Seeding-48h 2-8°C	0-3-2-2-1 (1.6)	-
5000	Selles sur cher au lait cru	Raw milk cheese	*L.seeligeri* Ad1783	Raw milk	Seeding-48h 2-8°C	1-5-2-2-3 (2.6)	+
5003	Roquefort au lait cru	Raw milk cheese	*L.welshimeri* Ad1667	Raw milk	Seeding-48h 2-8°C	1-3-3-2-1 (2.0)	+
5004	Reblochon au lait cru	Raw milk cheese	*L.welshimeri* Ad1667	Raw milk	Seeding-48h 2-8°C	1-3-3-2-1 (2.0)	+
5005	Selles sur cher au lait cru	Raw milk cheese	*L.ivanovii* Ad991	Raw milk	Seeding-48h 2-8°C	2-3-1-1-1 (1.6)	+
5007	Haricots plats surgelés	Frozen flat beans	*L.innocua* Ad1177	Mushrooms	Seeding-48h 2-8°C	4-3-3-4-1 (3.0)	+
5008	Epinards hachés surgelés	Frozen spinach	*L.innocua* Ad1177	Mushrooms	Seeding-48h 2-8°C	4-3-3-4-1 (3.0)	+
5009	Assiette croquante (chou, carottes, poivron)	Vegetable mix	*L.innocua* Ad1177	Mushrooms	Seeding-48h 2-8°C	4-3-3-4-1 (3.0)	+
5011	Poêlée champêtre surgelée	Frozen RTC vegetables	*L.welshimeri* Ad1175	Cooked rice	Seeding-48h 2-8°C	0-3-2-0-1 (1.2)	+
5012	Concombre à la crème	Deli salad (cucumber)	*L.welshimeri* Ad1175	Cooked rice	Seeding-48h 2-8°C	0-3-2-0-1 (1.2)	+

Sample number	Product (French name)	Product	Artificial contaminations				Global result
			Strain	Origin	Injury protocol	Inoculation level/25g	
5013	Macédoine de légumes	Deli salad (vegetables mix)	*L.welshimeri* Ad1175	Cooked rice	Seeding-48h 2-8°C	0-3-2-0-1 (1.2)	+
5980	Eau pareuse (industrie poisson)	Process water (fish industry)	*L.monocytogenes* AOOM009	Smoked salmon	Seeding-48h 2-8°C	0-1-2-1-0 (0.8)	+
5981	Eau épineuse (industrie poisson)	Process water (fish industry)	*L.monocytogenes* AOOM032	Smoked salmon	Seeding-48h 2-8°C	0-0-3-0-2 (1.0)	+
5982	Eau peleuse (industrie poisson)	Process water (fish industry)	*L.monocytogenes* AOOM045	Smoked salmon	Seeding-48h 2-8°C	0-1-1-1-4 (1.4)	+
5983	Eau laveuse (industrie poisson)	Process water (fish industry)	*L.monocytogenes* AOOM088	Smoked salmon	Seeding-48h 2-8°C	0-0-0-3-2 (1.0)	+
5984	Chiffonnette tapis déchets peleuse (industrie poisson)	Wipe (fish industry)	*L.monocytogenes* AOOM009	Smoked salmon	Seeding-48h 2-8°C	0-1-2-1-0 (0.8)	+
5985	Chiffonnette tapis trancheur ligne (industrie poisson)	Wipe (fish industry)	*L.monocytogenes* AOOM032	Smoked salmon	Seeding-48h 2-8°C	0-0-3-0-2 (1.0)	+
5986	Chiffonnette tapis pareuse (industrie poisson)	Wipe (fish industry)	*L.monocytogenes* AOOM045	Smoked salmon	Seeding-48h 2-8°C	0-1-1-1-4 (1.4)	+

Appendix D

Sensitivity study: raw data

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: non characteristic colony on TSYEA
d: doubtful colony

COMPOSITE FOODS READY-TO-EAT AND READY-TO-REHEAT																								
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1◆						Alternative method: LESS Plus broth Listeria spp method									LESS Plus broth storage for 72 h at 2 - 8°C						Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method									
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h		
1105	Piémontaise au jambon	RTE (vegetables ham)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	1	a
2903	Sandwich Baccon Tomate œuf sauce yaourt	Sandwich (bacon)	st	-	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	1	a
2904	Sandwich jambon fumé œuf mimosa crudités	Sandwich (ham)	st	st	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	1	a
3231	Sandwich au thon	RTE Sandwich (tuna)	H+	+(2)	H+	+	*L.monocytogenes*	+	-	-		-	-	ND	ND	-	-	-	-	-	ND	ND	1	a
3333	Piémontaise au jambon	RTE (Deli salad)	st	st	-	-		-	st	st		-	-	NA	NA	-							1	a
3735	Sandwich jambon - fromage-salade	Sandwich (ham-cheese)	-	-	-	-		-	H-	+	*L.innocua*	+	+	PD	PD		H-	+	+	+	PD	PD	1	a
3786	Piémontaise	RTE (Deli salad)	st	st	st	st		-	st	-		-	-	NA	NA	-							1	a
3833	Sandwich jambon emmental	Sandwich (ham-cheese)	-	-	-	-		-	st	st		-	-	NA	NA	-							1	a
3834	Sandwich jambon beurre	Sandwich (ham-butter)	-	-	-	-		-	-	-		-	-	NA	NA	-							1	a
3911	Salade niçoise	Deli-salads	-	-	-	-		-	-	-		-	-	NA	NA	-							1	a
3914	Sandwich duo de saumon	Sandwich (salmon)	-	-	-	-		-	H+(2)	-	*L.monocytogenes*	+	-	PD	NA		H+	+	+	+	PD	PD	1	a
4114	Sandwich chèvre tomates légumes	Sandwich (cheese, tomatoes)	st	-	-	-		-	-	st		-	-	NA	NA	-							1	a
4600	Sandwiwh thon, tomate œuf	Sandwich (tuna, toamto, egg)	st	st	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	1	a
4601	Sandwich duo saumon	Sandwich (salmon)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	1	a
4602	Sandwich saumon	Sandwich (salmon)	-	-	-	-		-	-	-		-	-	NA	NA	-							1	a
4603	Sandwich saumon	Sandwich (salmon)	st	st	-	-		-	-	st		-	-	NA	NA	-							1	a
4604	Sandwich saumon	Sandwich (salmon)	-	-	-	-		-	-	-		-	-	NA	NA	-							1	a
4624	Salade niçoise	Deli salad	-	-	-	-		-	-	-		-	-	NA	NA	-							1	a
5788	Wraps au saumon	RTRE (salmon)	H+	+	H+	+	*L.monocytogenes*	+	st	st		-	-	ND	ND	-	st	st	-	-	ND	ND	1	a
5789	Sandwich poulet	Sandwich (chicken)	st	-	-	-		-	st	st		-	-	NA	NA	-							1	a
5922	Sandwich jambon beurre	Sadwich (ham, butter)	-	-	st	-		-	st	-		-	-	NA	NA	-							1	a
5923	Sandwich poulet crudités	Sandwich (chicken, vegetables)	st	-	st	-		-	-	-		-	-	NA	NA	-							1	a
1117	Croissant jambon emmental	RTRH (cheese ham)	H+	+	H+	+	*L.monocytogenes*	+	st	st		-	-	ND	ND	-	st	st	-	-	ND	ND	1	b

COMPOSITE FOODS READY-TO-EAT AND READY-TO-REHEAT																										
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1◆						Alternative method: LESS Plus broth Listeria spp method															Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C								
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h		
1118	Pizza au chorizo	RTRH (Pizza)	st	-	-	-		-	-	-		-	-	NA	NA	-							1	b
1981	Tortilla oignons	RTRH (egg and oignon)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	1	b
1982	Moussaka	RTRHG (Moussaka)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	1	b
1989	Pizza jambon emmenthal	RTRH (Pizza)	-	-	-	-		-	-	-		-	-	NA	NA	-	st	st	-	-	NA	NA	1	b
1990	Quiche Lorraine	RTRH (quiche Lorraine)	st	-	-	-		-	st	st		-	-	NA	NA	-							1	b
1991	Moussaka	RTRH (moussaka)	st	st	-	-		-	st	st		-	-	NA	NA	-							1	b
2905	Croque 3 fromages	RTRH (cheese)	-	-	-	-		-	-	-		-	-	NA	NA	-							1	b
2913	Hachis parmentier pur bœuf	RTRH (beef)	st	st	st	st		-	st	st		-	-	NA	NA	-							1	b
2914	Bœuf bourguignon	RTRH (beef)	st	st	st	st		-	st	st		-	-	NA	NA	-	st	st	-	-	NA	NA	1	b
3318	Baguette gratinée jambon emmenthal	RTRH (ham cheese)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	1	b
3321	Mélange poulet tomates marinées	RTRH (chicken tomatoes)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	1	b
3323	Nugget emmenthal	RTRH (chicken cheese)	-	-	-	-		-	st	st		-	-	NA	NA	-							1	b
3325	Croque Monsieur	RTRH (croque monsieur)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	1	b
3442	Quiche Lorraine	RTRH (quiche Lorraine)	st	st	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	1	b
3443	Pizza chèvre lardons	RTRH (Pizza)	H+	+	H+	+	*L.monocytogenes*	+	st	-		-	-	ND	ND	-	st	-	-	-	ND	ND	1	b
3444	Hachis parmentier	RTRH (hachis parmentier)	st	st	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	1	b
3445	Macaronis tomates boulettes de bœuf	RTRH (macaronis beef)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	1	b
3446	Lasagnes à la bolognaise	RTRH (lasagnes)	H+	+	H+	+	*L.monocytogenes*	+	st	st		-	-	ND	ND	-	st	st	-	-	ND	ND	1	b
3447	Bœuf bourguignon	RTRH (beef)	st	st	st	st		-	st	st		-	-	NA	NA	-							1	b
3454	Quiche Lorraine	RTRH (quiche Lorraine)	st	st	st	st		-	st	st		-	-	NA	NA	-							1	b
3455	Pizza chèvre lardons	RTRH (Pizza)	-	-	-	-		-	st	st		-	-	NA	NA	-							1	b
3458	Hachis parmentier	RTRH (hachis parmentier)	st	st	-	-		-	st	st		-	-	NA	NA	-							1	b
3459	Macaronis tomates boulettes de bœuf	RTRH (macaronis beef)	st	st	st	st		-	st	st		-	-	NA	NA	-							1	b
3547	Maxi Croque-monsieur	RTRH (croque monsieur)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	1	b
3721	Pizza jambon fromage	RTRH (Pizza)	H-d	+d	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	1	b
3733	Pizza jambon-	RTRH (pizza)	-	+d	H-	+	*L.welshimeri*	+	H-	+	*L.welshimeri*	+	+	PA	PA		H-	+	+	+	PA	PA	1	b

COMPOSITE FOODS READY-TO-EAT AND READY-TO-REHEAT																								
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1◆						Alternative method: LESS Plus broth Listeria spp method								LESS Plus broth storage for 72 h at 2 - 8°C						Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method								
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h		
	fromage																							
4599	Panier chèvre épinards	RTRH	H-	+	H-	+	*L.innocua*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	1	b
4613	Pizza au saumon	Pizza	H-	+(2)	H-	+	*L.welshimeri*	+	H-	+	*L.welshimeri*	+	+	PA	PA		H-	+	+	+	PA	PA	1	b
5924	Croque-Monsieur Comté au jambon	RTRH	-	-	-	-		-	-	-		-	-	NA	NA	-							1	b
2916	Crème anglaise	Custard	st	st	st	st		-	st	st		-	-	NA	NA	-	st	st	-	-	NA	NA	1	c
2917	Crème anglaise	Custard	st	st	st	st		-	st	st		-	-	NA	NA	-	st	st	-	-	NA	NA	1	c
3322	Flan	Pastries	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	1	c
3330	Religieuses au chocolat	Pastries	-	-	-	-		-	st	st		-	-	NA	NA	-							1	c
3331	Eclair à la vanille	Pastries	st	-	-	-		-	st	st		-	-	NA	NA	-							1	c
3334	Œuf entier liquide pasteurisé	Pasteurized liquid whole egg	st	st	st	st		-	st	st		-	-	NA	NA	-							1	c
3335	Jaune d'œuf liquide pasteurisé	Pasteurized liquid yellow egg	st	st	st	st		-	st	st		-	-	NA	NA	-							1	c
3440	Coule d'œuf entier liquide pasteurisé	Pasteurized liquid whole egg	st	st	st	st		-	st	st		-	-	NA	NA	-							1	c
3441	Jaune d'œuf liquide pasteurisé	Pasteurized liquid yellow egg	H+	+	H+	+	*L.monocytogenes*	+	st	st		-	-	ND	ND	-	st	st	-	-	ND	ND	1	c
3448	Crème anglaise	Custard	st	st	st	st		-	st	st		-	-	NA	NA	-							1	c
3450	Coule d'œuf entier liquide pasteurisé	Pasteurized liquid whole egg	st	st	st	st		-	st	st		-	-	NA	NA	-							1	c
3451	Jaune d'œuf liquide pasteurisé	Pasteurized liquid yellow egg	st	st	st	st		-	st	st		-	-	NA	NA	-							1	c
3452	Crème anglaise	Custard	st	st	st	st		-	st	st		-	-	NA	NA	-							1	c
3453	Crème anglaise	Custard	st	st	st	st		-	st	st		-	-	NA	NA	-							1	c
3789	Coule de jaune d'œuf pasteurisé	Pasteurized liquid yellow egg	st	st	st	st		-	st	st		-	-	NA	NA	-							1	c
3790	Coule d'œuf entier pasteurisé	Pasteurized liquid whole egg	st	st	st	st		-	st	st		-	-	NA	NA	-							1	c
3799	Crêpes sucrées	Pancakes	-	-	-	-		-	-	-		-	-	NA	NA	-	st	st	-	-	NA	NA	1	c
3836	Crème anglaise	Custard	st	-	-	-		-	st	st		-	-	NA	NA	-							1	c
3837	Flan pâtissier	Pastries	st	st	st	st		-	st	st		-	-	NA	NA	-							1	c
4112	Flan pâtissier	Custard (dessert)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	1	c
4400	Tarte aux pommes	Apple pie	H-	+	H-	+	*L.innocua*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	1	c
4401	Tarte amandine	Almond pie	st	-	-	-		-	st	st		-	-	NA	NA	-							1	c
4402	Tartelette fraise	Strawberry pie	st	-	-	-		-	st	st		-	-	NA	NA	-							1	c
4403	Tartelette fruit	Fruitpie	-	-	-	-		-	+d (1)	-	NC	-	-	PPNA	NA	-	+d(2) (NC)	-	-	-	NA	NA	1	c
4993	Tortilla nature	Tortilla	H-	+	H-	+	*L.welshimeri*	+	st	st		-	-	ND	ND	-	st	st	-	-	ND	ND	1	c
4994	Tortilla nature	Tortilla	H-	+	H-	+	*L.welshimeri*	+	H-	+	*L.welshimeri*	+	+	PA	PA		H-	+	+	+	PA	PA	1	c

COMPOSITE FOODS READY-TO-EAT AND READY-TO-REHEAT																								
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1◆						Alternative method: LESS Plus broth Listeria spp method														Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C							
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h		
4995	Tortilla oignons	Tortilla with oinions	H-	+	H-	+	*L.innocua*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	1	c
4996	Tortilla nature	Tortilla	H-	+	H-	+	*L.innocua*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	1	c
5791	Tortilla nature	Tortilla	-	-	-	-		-	-	-		-	-	NA	NA	-							1	c
5792	Mayonnaise	Mayonnaise	st	st	st	st		-	st	st		-	-	NA	NA	-							1	c
5793	Mayonnaise	Mayonnaise	st	st	st	st		-	st	st		-	-	NA	NA	-							1	c

MEAT PRODUCTS																										
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1♦						Alternative method: LESS Plus broth Listeria spp method																Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C									
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h				
1113	Viande de dinde	Turkey meat	st	-	st	st		-	H-	+	*L.innocua*	+	+	PD	PD		H-	+	+	+	PD	PD	2	a
1114	Viande bovine	Beef meat	st	-	st	st		-	st	st		-	-	NA	NA	-							2	a
1115	Côte de porc	Pork meat	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+ (48 h)	+	+	PA	PA	2	a
2906	Viande de poulet congelée	Frozen poultry meat	H+	+	H+	+	*L.monocytogenes*	+	H+/H-	+	*L.monocytogenes*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	2	a
2907	Viande rouge cuisse de dinde	Turkey meat	H+/H-	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	2	a
2908	Viande de poulet congelée	Frozen poultry meat	H+/H-	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	H+/H-	+	*L.monocytogenes/ L.innocua*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	2	a
3227	Rôti de dinde	Turkey meat	H+/H-	+	H+	+	*L.monocytogenes/ L.welshimeri*	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	+	PA	PA		H+	+	+	+	PA	PA	2	a
3228	Viande de poulet congelée	Frozen chicken meat	H+	+	H+	+	*L.monocytogenes*	+	H+/H-	+	*L.monocytogenes/ L.innocua*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	2	a
3239	Haché de bœuf surgelé	Frozen ground beef	st	st	st	st		-	-	-		-	-	NA	NA	-							2	a
3240	Egréné de bœuf surgelé	Frozen ground beef	-	st	-	-		-	-	-		-	-	NA	NA	-							2	a
3796	Filets mignon congelés	Frozen pork meat	-	-	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	2	a
3818	Filet de porc	Pork meat	-	-	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	2	a
3824	Sauté de dinde cru	Turkey meat	H-d	+d	H-	+d	*L.welshimeri*	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	+	PA	PA		H+	+	+	+	PA	PA	2	a
3830	Viande de poulet congelée	Chicken meat	H+/H-	+	H+/H-	+d	*L.monocytogenes/ L.innocua*	+	H+/H-	+	*L.monocytogenes/ L.innocua*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	2	a
4118	Viande de blanc de poulet	Raw chicken meat	H+	+	H+	+	*L.monocytogenes*	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	2	a
4121	Sauté de dinde nature	Raw turkey meat	H+/H-	+	H+	+	*L.monocytogenes/ L.welshimeri*	+	H-	+	*L.innocua/ L.welshimeri*	+	+	PA	PA		H-	+	+	+	PA	PA	2	a
4627	Steak haché	Ground beef	H-	+	H-	+	*L.welshimeri*	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	+	PA	PA		H-	+	+	+	PA	PA	2	a
4628	Faux filet	Beef trim	H-	+	H-	+	*L.welshimeri*	+	H-	+	*L.welshimeri*	+	+	PA	PA		H-	+	+	+	PA	PA	2	a
4629	Carpaccio	Carpaccio	st	st	st	st		-	st	st		-	-	NA	NA	-							2	a
4630	Carpaccio	Carpaccio	st	st	st	st		-	st	st		-	-	NA	NA	-							2	a
5014	Carpaccio pur bœuf	Beef carpaccio	st	st	-	-		-	st	-		-	-	NA	NA	-							2	a
5015	Steak haché	Ground beef	-	st	-	-		-	-	-		-	-	NA	NA	-							2	a
5532	Hachés de veau	Ground veal	H-	+	H-	+	*L.innocua/ L.welshimeri*	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	2	a
5533	Escalope fine de poulet	Chicken meat	H+	+	H+	+	*L.monocytogenes*	+	st	-		-	-	ND	ND	-	st	st	-	-	ND	ND	2	a
5534	Viande bovine rumsteak	Beef trim	H-	+	H-	+	*L.innocua/ L.welshimeri*	+	H-	+	*L.welshimeri/ L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	2	a
5535	Viande de porc	Pork meat	H-	+	H-	+	*L.welshimeri*	+	H-	+	*L.welshimeri*	+	+	PA	PA		H-	+	+	+	PA	PA	2	a
6117	Bavette d'Aloyau surgelée	Frozen beef trim	-	st	st	-		-	-	-		-	-	NA	NA	-							2	a
6118	Steak haché surgelé	Frozen ground beef	-	-	-	-		-	-	-		-	-	NA	NA	-							2	a

MEAT PRODUCTS																									
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1◆						Alternative method: LESS Plus broth Listeria spp method															Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C								
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h		
3246	Blanquette de veau	RTRH (veal meat)	st	st	st	st		-	st	st		-	-	NA	NA	-							2	b
3247	Poulet Basquaise	RTRH (chicken)	st	st	st	st		-	st	st		-	-	NA	NA	-							2	b
3683	Spaghetti bolognaise	RTRH (seasoned pasta)	H-	+	H-	+	*L.welshimeri*	+	H-	+	*L.welshimeri*	+	+	PA	PA		H-	+	+	+	PA	PA	2	b
3684	Cordon bleu de dinde et coquillettes	RTRH (turkey)	H-	+	H-	+	*L.innocua*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	2	b
3685	Courgettes farcies	RTRH (zucchini-pork)	H-	+	H-	+	*L.welshimeri*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	2	b
3686	Osso bucco de dinde	RTRH (turkey)	H-	+	H-	+	*L.innocua*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	2	b
3694	Spaghetti bolognaise	RTRH (seasoned pasta)	st	st	st	st		-	-	st		-	-	NA	NA	-							2	b
3695	Cordon bleu de dinde et coquillettes	RTRH (turkey)	st	st	-	-		-	-	st		-	-	NA	NA	-							2	b
3696	Courgettes farcies	RTRH (zucchini-pork)	st	st	st	st		-	st	st		-	-	NA	NA	-							2	b
3697	Osso bucco de dinde	RTRH (turkey)	st	st	st	st		-	st	st		-	-	NA	NA	-							2	b
3720	Bœuf bourguignon	RTRH (Bourguignon)	st	st	st	st		-	H+d	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	2	b
3732	Bœuf bourguignon	RTRH (Bourguignon)	st	st	st	st		-	st	st		-	-	NA	NA	-							2	b
3734	Hachis parmentier	RTRH (hachis parmentier)	H-	+	H-	+	*L.innocua*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	2	b
3783	Spaghetti bolognaise	RTRH (Spaghetti bolognese)	st	st	-	st		-	-	st		-	-	NA	NA	-							2	b
3784	Courgettes farcies	RTRH (vegetables-pork)	st	st	st	st		-	st	st		-	-	NA	NA	-							2	b
3785	Cordon bleu de dinde et coquillettes	RTRH (turkey)	st	st	st	st		-	st	st		-	-	NA	NA	-							2	b
4619	Nuggets de dinde	Turkey nuggets	st	-	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	2	b
4620	Cordons bleus de dinde	RTC turkey	st	st	-	-		-	st	st		-	-	NA	NA	-							2	b
5790	Lasagnes	RTRH (pasta)	st	st	st	st		-	st	st		-	-	NA	NA	-							2	b
5925	Nuggets au poulet	Chicken nuggets	-	-	-	-		-	st	st		-	-	NA	NA	-							2	b
5926	Cordons bleus de dinde	RTRH (turkey)	st	-	-	-		-	st	st		-	-	NA	NA	-							2	b
1106	Rillettes de porc	Rillettes	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	2	c
1983	Baccon	Baccon	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	2	c
2915	Jambon cuit supérieur	Ham	st	st	st	st		-	st	st		-	-	NA	NA	-	st	st	-	-	NA	NA	2	c
3235	Chair à saucisse	Delicatessen	st	st	H-d	st		-	-	-		-	-	NA	NA	-							2	c

MEAT PRODUCTS																										
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1◆						Alternative method: LESS Plus broth Listeria spp method																Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C									
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h				
3236	Emincés de dinde marinés	Marinated turkey	-	-	-	-		-	H-d	+d	*L.welshimeri*	+	+	PD	PD		H-	+	+	+	PD	PD	2	c
3245	Rillettes du Mans	Rillettes	st	st	st	st		-	st	st		-	-	NA	NA	-							2	c
3332	Museau de porc	Delicatessen	st	-	-	-		-	st	st		-	-	NA	NA	-							2	c
3795	Pâté de veau	Veal pâté	st	st	st	st		-	H+(1)	+(3)	*L.monocytogenes*	+	+	PD	PD		st	st	-	-	NA	NA	2	c
3797	Côte de porc thym romarin	Seasoned pork	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	2	c
3800	Fromage de tête aux herbes	Cooked delicatessen	st	-	st	-		-	st	st		-	-	NA	NA	-	st	st	-	-	NA	NA	2	c
3801	Saucisses	Sausages	st	-	st	-		-	-	-		-	-	NA	NA	-	st	-	-	-	NA	NA	2	c
3802	Jambon à l'ancienne	Ham	st	st	st	st		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	2	c
3806	Jambon à l'ancienne	Ham	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	2	c
3819	Jambon	Ham	st	st	st	st		-	st	-		-	-	NA	NA	-							2	c
3825	Saucisse de Toulouse	Sausages	st	st	-	-		-	st	st		-	-	NA	NA	-							2	c
3912	Rillettes	Rillettes	-	st	st	st		-	H-d	-	*L.grayi*	+	-	PD	NA		H-d	-	+	-	PD	NA	2	c
4115	Merguez	Merguez	-	st	-	-		-	st	st		-	-	NA	NA	-							2	c
4614	Terrine de campagne	Pâté	st	st	st	st		-	st	st		-	-	NA	NA	-							2	c
4615	Chipolatas nature	Sausages	H-	+	H-	+	*L.welshimeri*	+	H+	+d	*L.monocytogenes*	+	+	PA	PA		H+(1)	-	+	-	PA	ND	2	c
4616	Rillettes	Rillettes	-	st	st	st		-	-	st		-	-	NA	NA	-	-	-	-	-	NA	NA	2	c
4617	Rillettes	Rillettes	st	st	st	st		-	st	st		-	-	NA	NA	-							2	c
4618	Allumettes jambon	Sliced ham	st	st	st	st		-	-	st		-	-	NA	NA	-							2	c

MILK AND DAIRY PRODUCTS																										
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1♦						Alternative method: LESS Plus broth Listeria spp method																Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C									
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h				
1107	Camembert	Cheese	-	st	st	st		-	st	st		-	-	NA	NA	-							3	a
3736	Leerdammer	Cheese	st	-	st	-		-	H+	+d	*L.ivanovii/ L.innocua*	+	+	PD	PD		H+	+	+	+	PD	PD	3	a
3829	Fourme d'Ambert	Cheese	-	-	-	-		-	st	st		-	-	NA	NA	-	st	st	-	-	NA	NA	3	a
4605	Reblochon au lait cru	Raw milk cheese	-	-	st	-		-	-	-		-	-	NA	NA	-							3	a
4607	Saint Nectaire au lait cru	Raw milk cheese	st	st	st	st		-	-	st		-	-	NA	NA	-							3	a
4608	Fromage non affiné au lait cru de vache	Raw milk cheese	-	-	st	-		-	H-d	-	catalase-	-	-	PPNA	NA	-							3	a
4609	Reblochon au lait cru	Raw milk cheese	st	st	-	-		-	-	st		-	-	NA	NA	-							3	a
4610	Reblochon au lait cru	Raw milk cheese	H-d(1)	-	-	-	NC	-	-	-		-	-	NA	NA	-							3	a
4611	Fromage non affiné au lait cru de vache	Raw milk cheese	st	st	st	st		-	H-d	-	catalase-	-	-	PPNA	NA	-							3	a
4612	Fromage non affiné au lait cru de vache	Raw milk cheese	st	st	-	-		-	st	st		-	-	NA	NA	-							3	a
4625	Bethmal au lait cru de vache	Raw milk cheese	st	st	st	st		-	-	-		-	-	NA	NA	-							3	a
4626	Tomme de montagne au lait cru	Raw milk cheese	-	st	-	-		-	-	-		-	-	NA	NA	-							3	a
4997	Saint Nectaire au lait cru	Raw milk cheese	-	-	st	st		-	H-	+	*L.innocua*	+	+	PD	PD		H-	+	+	+	PD	PD	3	a
4998	Rocamadour au lait cru	Raw milk cheese	H-	+	H-	+	*L.innocua*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	3	a
4999	Morbier au lait cru	Raw milk cheese	-	-	st	st		-	-	-		-	-	NA	NA	-							3	a
5000	Selles sur cher au lait cru	Raw milk cheese	H-	+	H-	+d	*L.seeligeri*	+	-	-		-	-	ND	ND	-	-	-	-	-	ND	ND	3	a
5003	Roquefort au lait cru	Raw milk cheese	H-(1)	+(3)	H-	+	*L.welshimeri*	+	-/H- at 48h	-	*L.welshimeri at 48h*	-	-	ND	ND	-	-	-	-	-	ND	ND	3	a
5004	Reblochon au lait cru	Raw milk cheese	H-	+	H-	+	*L.innocua*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	3	a
5005	Selles sur cher au lait cru	Raw milk cheese	H+	-	H+	-	*L.ivanovii*	+	-	-		-	-	ND	ND	-	-	-	-	-	ND	ND	3	a
5511	Maroilles au lait cru	Raw milk cheese	st	-	st	-		-	H-	+	*L.innocua*	+	+	PD	PD		H-	+	+	+	PD	PD	3	a
5512	Tomme au lait cru	Raw milk cheese	st	-	st	-		-	st	-		-	-	NA	NA	-							3	a
5513	Munster au lait cru	Raw milk cheese	st	-	st	st		-	-	-		-	-	NA	NA	-							3	a
5514	Brie de Meaux au lait cru	Raw milk cheese	st	-	-	-		-	-	-		-	-	NA	NA	-							3	a
5515	Morbier au lait cru	Raw milk cheese	-	-	-	-		-	-	-		-	-	NA	NA	-							3	a

MILK AND DAIRY PRODUCTS																											
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1◆						Alternative method: LESS Plus broth Listeria spp method																Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C									
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h				
5516	Fromage à pâte pressée au lait cru	Raw milk cheese	-	-	-	-		-	-	-		-	-	NA	NA	-							3	a
5517	Fromage à pâte molle au lait cru	Raw milk cheese	-	-	-	-		-	-	-		-	-	NA	NA	-							3	a
5518	Fromage à pâte pressée au lait cru	Raw milk cheese	-	-	-	-		-	-	-		-	-	NA	NA	-							3	a
5519	Fromage à pâte pressée au lait cru	Raw milk cheese	-	-	st	-		-	-	-		-	-	NA	NA	-							3	a
5520	Fromage à pâte pressée au lait cru	Raw milk cheese	-	-	-	-		-	-	-		-	-	NA	NA	-							3	a
6243	Fromage non affiné au lait cru de vache	Raw milk cheese	-	-	-	-		-	-	-		-	-	NA	NA	-							3	a
6244	Fromage non affiné au lait cru de vache	Raw milk cheese	-	-	-	-		-	-	-		-	-	NA	NA	-							3	a
6245	Fromage affiné au lait cru de brebis	Raw ewe milk cheese	st	-	-	-		-	-	-		-	-	NA	NA	-							3	a
6246	Fromage affiné au lait cru de brebis	Raw ewe milk cheese	-	-	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	3	a
6247	Fromage affiné au lait cru de brebis	Raw ewe milk cheese	H+(5)	+(1)	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	3	a
1110	Lait ribot	Fermented milk	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	3	b
1986	Lait de brebis	Sheep milk	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	3	b
1987	Lait de brebis	Sheep milk	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	3	b
1988	Lait de brebis	Sheep milk	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	3	b
2918	Lait ribot	Fermented milk	st	st	-	-		-	st	st		-	-	NA	NA	-							3	b
2919	Lait ribot	Fermented milk	st	st	-	-		-	-	-		-	-	NA	NA	-							3	b
3326	Lait de brebis	Sheep milk	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	3	b
3327	Lait de brebis	Sheep milk	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	3	b
3548	Lait fermenté	Fermented milk	H+	+	H+	+	*L.monocytogenes*	+	st	st		-	-	ND	ND	-	st	st	-	-	ND	ND	3	b
3549	Lait fermenté	Fermented milk	H+	+	H+	+	*L.monocytogenes*	+	st	st		-	-	ND	ND	-	H+(3) (*L.monocy-togenes*)	+(3)	+	+	PA	PA	3	b
3550	Lait ribot	Fermented milk	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	3	b
3551	Lait ribot fermier	Fermented milk	st	st	-	-		-	st	st		-	-	NA	NA	-							3	b
3552	Lait ribot	Fermented milk	st	st	-	-		-	st	st		-	-	NA	NA	-							3	b
3557	Lait ribot	Fermented milk	st	st	st	st		-	st	st		-	-	NA	NA	-							3	b
3558	Lait ribot fermier	Fermented milk	st	-	-	-		-	st	st		-	-	NA	NA	-							3	b
3559	Lait ribot	Fermented milk	st	-	-	-		-	st	st		-	-	NA	NA	-							3	b
3560	Gros lait fermier	Fermented milk	st	st	-	-		-	st	st		-	-	NA	NA	-							3	b
3561	Gros lait fermier	Fermented milk	st	st	-	-		-	st	st		-	-	NA	NA	-							3	b
3792	Lait ribot	Fermented milk	st	st	-	-		-	st	-		-	-	NA	NA	-							3	b
3831	Lait cru entier	Raw milk	st	-	-	-		-	st	-		-	-	NA	NA	-							3	b

MILK AND DAIRY PRODUCTS																											
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1◆						Alternative method: LESS Plus broth Listeria spp method																Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C									
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h				
3832	lait de brebis	Ewe milk	st	-	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	3	b
4122	Lait cru de brebis	Raw ewe milk	st	-	-	-		-	-	st		-	-	NA	NA	-	-	st	-	-	NA	NA	3	b
4123	Lait cru de brebis	Raw ewe milk	H+/H-	+	H+/H-	+	*L.monocytogenes/ L.innocua*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	3	b
5521	Lait cru de brebis	Raw ewe milk	st	-	-	-		-	st	st		-	-	NA	NA	-							3	b
1109	Fromage pasteurisé de vache	Pasteurized cheese	st	st	st	st	/	-	st	st		-	-	NA	NA	-							3	c
1111	Lait entier pasteurisé	Pasteurized milk	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	3	c
1979	Panna cotta caramel	Panna cotta	H+	+	H+	+	*L.monocytogenes*	+	st	st		-	-	ND	ND	-	st	st	-	-	ND	ND	3	c
1992	Glace crème brûlée	Ice cream	st	-	-	-		-	st	st		-	-	NA	NA	-							3	c
1993	Glace noisette	Ice cream	st	-	-	-		-	st	st		-	-	NA	NA	-							3	c
1994	Tomme au moine pasteurisé	Pasteurized cheese	-	st	-	-		-	st	st		-	-	NA	NA	-							3	c
1995	Fromage de brebis pasteurisé	Pasteurized cheese	-	-	-	-		-	st	st		-	-	NA	NA	-							3	c
3319	Sauce	Sauce	-	st	-	-		-	-	st		-	-	NA	NA	-							3	c
3320	Sauce fromage blanc ciboulette	Sauce (cheese vegetables)	-	-	-	-		-	st	-		-	-	NA	NA	-							3	c
3460	Camembert au lait pasteurisé	Pasteurized cheese	st	st	st	st		-	-	st		-	-	NA	NA	-							3	c
3687	Gorgonzola	Pasteurized cheese	-	st	H-d	+d	Gram-	-	-	st		-	-	NA	NA	-							3	c
3688	Brie	Pasteurized cheese	H+d	+	H+	+	*L.ivanovii*	+	H+	+	*L.ivanovii*	+	+	PA	PA		H+	+	+	+	PA	PA	3	c
3689	Fromage de brebis pasteurisé	Pasteurized cheese	st	-	H+	+	*L.innocua*	+	H+	+	*L.ivanovii*	+	+	PA	PA		H+	+	+	+	PA	PA	3	c
3698	Gorgonzola	Pasteurized cheese	st	st	-	-		-	st	st		-	-	NA	NA	-							3	c
3699	Fromage de vache pasteurisé	Pasteurized cheese	-	-	-	-		-	-	-		-	-	NA	NA	-							3	c
3700	Fromage de brebis pasteurisé	Pasteurized cheese	st	-	-	-		-	-	-		-	-	NA	NA	-							3	c
3724	Fromage pasteurisé de vache	Pasteurized cheese	-	-	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	3	c
3725	Brie pasteurisé	Pasteurized cheese	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	3	c
3726	Fromage pasteurisé de vache	Pasteurized cheese	st	-	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	3	c
3727	Camembert au lait pasteurisé	Pasteurized cheese	st	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	3	c
3738	Fromage au lait pasteurisé	Pasteurized cheese	st	-	-	-		-	st	-		-	-	NA	NA	-							3	c
3739	Camembert au lait pasteurisé	Pasteurized cheese	st	st	st	st		-	H-	+	*L.welshimeri*	+	+	PD	PD		-	+	-	+	NA	PD	3	c
3791	Lait demi-écrémé pasteurisé	Pasteurized milk	st	st	st	st		-	st	st		-	-	NA	NA	-							3	c

MILK AND DAIRY PRODUCTS																								
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1◆						Alternative method: LESS Plus broth Listeria spp method														Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C							
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h		
3835	Crème glacée à la vanille	Vanilla ice-cream	st	-	-	-		-	st	st		-	-	NA	NA	-							3	c
4404	Camembert pasteurisé	Pasteurized milk cheese	H-d	+d	H-	+	*L.seeligeri*	+	-	-		-	-	ND	ND	-	st	-	-	-	ND	ND	3	c
4405	Saint Paulin pasteurisé	Pasteurized milk cheese	-	-	-	-		-	st	st		-	-	NA	NA	-							3	c
4406	Val d'Automne pasteurisé	Pasteurized milk cheese	st	st	-	-		-	st	st		-	-	NA	NA	-							3	c

VEGETABLES																										
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1◆						Alternative method: LESS Plus broth Listeria spp method															Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C								
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h		
1120	Epinards en branches	Spinach	-	-	-	-		-	H-	-	*catalase-*	-	-	PPNA	NA								4	a
1122	Jeunes pousses	Baby leaves	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	4	a
1996	Carottes en rondelles surgelées	Frozen sliced carrots	st	st	st	st		-	st	st		-	-	NA	NA	-							4	a
1997	Epinards en branches surgelés	Frozen spinach	-	-	-	-		-	-	st		-	-	NA	NA	-							4	a
1998	Terrine de saumon à l'aneth	Salmon terrine	st	st	st	st		-	st	st		-	-	NA	NA	-							4	a
2910	Persil plat	Persil	st	-	-	-		-	-	-		-	-	NA	NA	-	-	-	-	-	NA	NA	4	a
3234	Persil plat	Persil	st	st	-	-		-	-	st		-	-	NA	NA	-							4	a
3328	Pousses d'épinards	Baby leaves	H-	+	H-	+	*L.innocua*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	4	a
3329	Jeunes pousses corsées	Baby leaves	-	-	-	-		-	-	-		-	-	NA	NA	-							4	a
3917	Fenouil	Fenouil	H+	+d	H+	+	*L.monocytogenes*	+	H+	+(1)	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	4	a
3926	Tendres pousses	Baby leaves	-	-	-	-		-	-/H- (1) at 48 h	-	*L.seeligeri at 48 h*	-	-	NA	NA		-/H- at 48 h	+d (*L.seeligeri*)	-	+	NA	PD	4	a
3927	Jeunes pousses	Baby leaves	-	-	-	-		-	-	-		-	-	NA	NA	-							4	a
4111	Petits pois très fins	Peas	H-	+	H-	+	*L.innocua*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	4	a
4415	Pousses d'épinards	Spinach	H-	+	H-	+	*L.innocua*	+	-	+	*L.innocua*	-	+	ND	PA		H-d	+	+	+	PA	PA	4	a
4416	Pousses d'épinards	Spinach	-	-	-	-		-	-	-		-	-	NA	NA	-	-	-	-	-	NA	NA	4	a
4417	Pousses d'épinards	Spinach	H-d	+	H-	+	*L.innocua*	+	-	-		-	-	ND	ND	-	-	-	-	-	ND	ND	4	a
4418	Pousses d'épinards	Spinach	-	-	H-d	+d	*L.seeligeri*	+	-	-		-	-	ND	ND	+ (L.seeligeri)	-	-	-	-	ND	ND	4	a
4423	Pousses d'épinards	Spinach	-	-	-	-		-	-	-		-	-	NA	NA	-							4	a
4621	Poivrons jaunes en cubes	Yellow peppers	st	st	st	st		-	st	st		-	-	NA	NA	-							4	a
4622	Dés de courgettes crues	Zucchini cubes	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	4	a
5007	Haricots plats surgelés	Frozen flat beans	H-	+	H-	+	*L.innocua*	+	H+	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	4	a
5008	Epinards hachés surgelés	Frozen spinach	-	-	-	-		-	H+	+	*L.innocua*	+	+	PD	PD		H-	+	+	+	PD	PD	4	a
5011	Poêlée champêtre surgelée	Frozen RTC vegetables	-	-	-	-		-	H+	+	*L.welshimeri*	+	+	PD	PD		H-	+	+	+	PD	PD	4	a
1119	Carottes en rondelles	Sliced carrots	st	st	st	st		-	st	st		-	-	NA	NA	-	st	st	-	-	NA	NA	4	b
2909	Poëlée de pommes de terre aux oignons	RTRH vegetables	st	-	-	-		-	-	-		-	-	NA	NA	-	-	-	-	-	NA	NA	4	b
3232	Pommes de terre	RTRH	-	-	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	4	b

VEGETABLES																									
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1◆						Alternative method: LESS Plus broth Listeria spp method															Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C								
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h		
	à la salardaise	vegetables																						
3243	Carottes râpées	RTE (Grated carrots)	st	st	st	st		-	st	st		-	-	NA	NA	-							4	b
3244	Crudités en mélange	Mixed vegetables	st	-	-	-		-	st	st		-	-	NA	NA	-							4	b
3324	Palets courgette légumes	RTRH vegetables	-	-	-	-		-	-	-		-	-	NA	NA	-							4	b
3457	Salade croquante	Salad	st	st	-	-		-	-	-		-	-	NA	NA	-							4	b
3798	Oignons frits	Fried onions	st	-	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+d	+	+	+	PD	PD	4	b
3821	Poëlée de pommes de terre aux oignons	RTRH vegetables	st	-	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	4	b
3924	Oignons préfrits surgelés	Frozen pre-cooked oignon	st	st	H-	+	*L.innocua*	+	H-(1)	+	*L.innocua*	+	+	PA	PA		-	+	-	+	ND	PA	4	b
3925	Champignons émincés surgelés	Frozen pre-cooked mushrooms	st	-	H-	+	*L.innocua*	+	H+/H-	+	*L.monocytogenes/ L.innocua*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	4	b
3928	Baby carrots	Baby carrots	st	st	st	st		-	st	st		-	-	NA	NA	-							4	b
4411	Salade 4 saveurs	Mixed salads	-	-	-	-		-	-	st		-	-	NA	NA	-							4	b
4412	Carottes râpées fraîches	Fresh grated carrots	st	st	st	st		-	st	st		-	-	NA	NA	-							4	b
4413	Mélange de légumes	Mixed vegetables	H-	+	H-	+	*L.innocua*	+	st	st		-	-	ND	ND	-	st	st	-	-	ND	ND	4	b
4414	Mélange de légumes	Mixed vegetables	st	+d	H-d	+d	*L.seeligeri*	+	-/H- at 48h	+d	*L.seeligeri*	-	+	ND	PA		H-	+	+	+	PA	PA	4	b
4419	Salade 4 saveurs	Mixed salads	-	-	-	-		-	-	-		-	-	NA	NA	-							4	b
4420	Carottes râpées fraîches	Fresh grated carrots	st	st	st	st		-	st	st		-	-	NA	NA	-							4	b
4421	Mélange de légumes	Mixed vegetables	H-	+	H-	+	*L.innocua*	+	H-	-	*L.innocua*	+	-	PA	ND		H-	+	+	+	PA	PA	4	b
4422	Mélange de légumes	Mixed vegetables	-	-	-	-		-	-	-		-	-	NA	NA	-							4	b
5009	Assiette croquante (chou, carottes, poivron)	Vegetable mix	H-	+	H-	+	*L.innocua*	+	H+	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	4	b
1104	Macédoine de légumes	RTE (Macedoine)	st	st	-	-		-	st	st		-	-	NA	NA	-							4	c
1984	Macédoine de légumes	RTE (Macedoine)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	4	c
1985	Carottes râpées	RTE (Grated carrots)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	4	c
2920	Macédoine de légumes	RTE (Macedoine)	st	st	-	-		-	-	-		-	-	NA	NA	-	-	-	-	-	NA	NA	4	c
2921	Céleri rémoulade	RTE (Vegetables)	st	st	st	st		-	st	st		-	-	NA	NA	-							4	c
3456	Carottes râpées	RTE (Sliced carrots)	st	st	st	st		-	st	st		-	-	NA	NA	-							4	c
3690	Macédoine de légumes	RTE (Macedoine)	H-	+	H-	+	*L.innocua*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	4	c
3691	Coleslaw	RTE (Coleslaw)	st	-	-	-		-	H-	+	*L.innocua*	+	+	PD	PD		H-	+	+	+	PD	PD	4	c

VEGETABLES																									
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1◆						Alternative method: LESS Plus broth Listeria spp method														Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C							
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h		
3701	Macédoine de légumes	RTE (Macedoine)	-	-	-	-		-	st	-		-	-	NA	NA	-							4	c
3702	Coleslaw	RTE (Coleslaw)	st	st	st	st		-	-	st		-	-	NA	NA	-							4	c
3787	Coleslaw	RTE (Coleslaw)	st	st	st	st		-	st	st		-	-	NA	NA	-							4	c
3788	Macédoine	RTE (Macedoine)	st	st	-	-		-	-	-		-	-	NA	NA	-							4	c
3823	Palets épinards chèvre	RTE (Spinach-cheese)	st	-	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	4	c
3918	Galette de blé noir	RTE gallette	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes/ L.innocua*	+	+	PA	PA		H+	+	+	+	PA	PA	4	c
4407	Coleslaw	RTE (Coleslaw)	st	-	-	-		-	H-	+	*L.innocua*	+	+	PD	PD		H-	+	+	+	PD	PD	4	c
4408	Macédoine	RTE (Macedoine)	H-	+	H-	+d	*L.seeligeri*	+	-	-		-	-	ND	ND	-	-	-	-	-	ND	ND	4	c
4409	Comcombre à la crème	RTE cucumber	-	-	-	-		-	-	-		-	-	NA	NA	-							4	c
4410	Céleri rémoulade	RTE (Celery)	H-	+	H-	+	*L.innocua*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	4	c
4623	Mélange de crudités	Vegetables mix	st	st	-	-		-	st	st		-	-	NA	NA	-							4	c
5012	Concombre à la crème	Deli salad (concomber)	H-	+	H-	+	*L.welshimeri*	+	H+	+	*L.welshimeri*	+	+	PA	PA		H-	+	+	+	PA	PA	4	c
5013	Macédoine de légumes	Deli salad (vegetables mix)	H-	+	H-	+	*L.welshimeri*	+	-	-		-	-	ND	ND	-	-	-	-	-	ND	ND	4	c

FISH AND SEAFOOD																												
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1◆						Alternative method: LESS Plus broth Listeria spp method									LESS Plus broth storage for 72 h at 2 - 8°C						Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method												
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h		
1112	Filet de lieu noir	Fresh raw fish	st	-	st	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	5	a
3241	Filet de cabillaud surgelé	Frozen fish	-	-	st	st		-	-	-		-	-	NA	NA	-							5	a
3242	Pavés de saumon d'Atlantique	Frozen fish	st	st	st	st		-	st	st		-	-	NA	NA	-							5	a
3809	Crevettes décortiquées	Shrimp	st	-	-	-		-	-	-		-	-	NA	NA	-							5	a
3810	Filet de Flétan	Fish fillet	st	st	st	st		-	-	-		-	-	NA	NA	-							5	a
3811	Filet de julienne	Fish fillet	st	-	st	st		-	-	-		-	-	NA	NA	-							5	a
3827	Palets de julienne	Fish fillet	-	-	-	-		-	st	st		-	-	NA	NA	-							5	a
3828	Aiguillettes de Cabillaud	Fish fillet	H+d/H-	+	H+d/H-	+	*L.innocua*	+	H+/H-	+	*L.monocytogenes/ L.innocua*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	5	a
3913	Paupiette de saumon	RTRH salmon	H+	+	H+	+	*L.monocytogenes*	+	H+/H-	+	*L.monocytogenes/ L.innocua*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	5	a
3915	Croquettes de saumon	RTRH salmon	st	st	-	-		-	-	-		-	-	NA	NA	-							5	a
4116	Filet de bar	Fish fillet	-	st	H+	+	*L.monocytogenes*	+	-	-		-	-	ND	ND	-	-	-	-	-	ND	ND	5	a
4119	Paupiette de saumon	RTRH salmon	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	5	a
4124	Filet de Flétant surgelé	Frozen fish filet	H+/H-d	+	H+/H-	+	*L.monocytogenes/ L.innocua*	+	H+/H-	+	*L.monocytogenes/ L.innocua*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	5	a
4125	Coktail de fruit de mer	Seafood coktail	-	-	-	-		-	-	-		-	-	NA	NA	-							5	a
4126	Filet de Colin surgelé	Fozen hake fillet	-	-	-	-		-	-	-		-	-	NA	NA	-							5	a
5522	Filet de panga	Fish fillet	H+/H-	+	H+/H-	+	*L.monocytogenes/ L.innocua*	+	H+/H-	+	*L.monocytogenes/ L.innocua*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	5	a
5530	Filet de colin	Fish fillet	st	-	st	st		-	-	-		-	-	NA	NA	-							5	a
5531	Filet de flétan	Fish fillet	H-	+	H-	+	*L.innocua/ L.welshimeri/ L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	5	a
5784	Filet de Zinger	Fish fillet	st	st	st	st		-	-	-		-	-	NA	NA	-							5	a
5785	Chair de saumon	Salmon	st	st	st	st		-	st	st		-	-	NA	NA	-							5	a
5888	Filets de sardine	Pilhards fillets	st	st	-	-		-	st	-		-	-	NA	NA	-							5	a
1116	Truite fumée	Smoked trout	st	st	st	st		-	-	+	*L.monocytogenes*	-	+	NA	PD		st	st	-	-	NA	NA	5	b
2922	Harengs fumés	Smoked herrings	st	st	st	-		-	st	st		-	-	NA	NA	-	st	st	-	-	NA	NA	5	b
3793	Saumon fumé	Smoked salmon	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	5	b
3794	Saumon fumé	Smoked salmon	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	5	b
3803	Saumon fumé	Smoked salmon	H-	+	H-	+	*L.welshimeri*	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	5	b
3804	Truite fumée	Smoked trout	H-	+	H-	+	*L.welshimeri*	+	H+d/H-	+	*L.welshimeri*	+	+	PA	PA		H-	+	+	+	PA	PA	5	b
3805	Truite fumée	Smoked trout	H-	+	H-	+	*L.welshimeri*	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	+	PA	PA		H-	+	+	+	PA	PA	5	b
3812	Truite fumée	Smoked trout	-	-	-	-		-	-	-		-	-	NA	NA	-							5	b

FISH AND SEAFOOD																											
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1◆						Alternative method: LESS Plus broth Listeria spp method																Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C									
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h				
3813	Saumon fumé	Smoked salmon	st	st	st	st		-	-	-		-	-	NA	NA	-							5	b
3919	Truite de mer fumée	Smoked trout	H+	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	+	PA	PA		H+(1)	st	+	-	PA	ND	5	b
3920	Saumon fumé d'Atlantique	Smoked salmon	H+/H-	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	5	b
3921	Saumon fumé bio	Smoked salmon	H-	+	H-	+	*L.welshimeri*	+	H-	+	*L.monocytogenes/ L.welshimeri*	+	+	PA	PA		H-	+	+	+	PA	PA	5	b
3922	Saumon fumé supérieur	Smoked salmon	H-	+	H-	+	*L.welshimeri*	+	H-	+	*L.monocytogenes/ L.welshimeri*	+	+	PA	PA		H+(1)	+(2)	+	+	PA	PA	5	b
3923	Truite de mer fumée	Smoked trout	H+	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	H+	+	*L.monocytogenes/ L.welshimeri*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	5	b
3929	Saumon fumé	Smoked salmon	st	st	-	-		-	-	-		-	-	NA	NA	-							5	b
3930	Saumon fumé salé	Smoked salmon	st	st	st	st		-	st	st		-	-	NA	NA	-							5	b
5016	Saumon fumé	Smoked salmon	st	st	st	st		-	-	st		-	-	NA	NA	-							5	b
5017	Harengs fumés au naturel	Smoked herrings	st	st	st	st		-	st	st		-	-	NA	NA	-							5	b
6954	Saumon fumé	Smoked salmon	st	st	st	st		-	-	-		-	-	NA	NA	-							5	b
6955	Filets de harengs fumés	Smoked herring fillets	st	st	st	st		-	st	st		-	-	NA	NA	-							5	b
1108	Terrine de saumon à l'aneth	RTE (Salmon terrin)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	5	c
1121	Batonnets saveur crabe	RTE (Surimi)	st	st	st	st		-	st	st		-	-	NA	NA	-							5	c
2911	Colin d'Alaska en sauce	RTRH (fish)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	5	c
2912	Filet de bar sauce iodée	RTRH (fish)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	5	c
2923	Bâtonnets de surimi	RTE (Surimi)	st	st	st	st	/	-	st	st		-	-	NA	NA	-							5	c
3229	Filet de cabillaud pâné	RTRH (fish)	st	st	-	-		-	-	-		-	-	NA	NA	-							5	c
3230	Boulette de saumon	RTRH (salmon)	st	st	st	st		-	st	st		-	-	NA	NA	-							5	c
3233	Meunière de poisson blanc	RTRH (fish)	st	-	-	-		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	5	c
3807	Surimi saveur crabe	RTE (Surimi)	st	st	-	-		-	-	-		-	-	NA	NA	-							5	c
3808	Terrine de Saint Jacques	Scallops terrine	-	-	-	-		-	st	st		-	-	NA	NA	-							5	c
3820	Merlu blanc pâné	RTRH (fish)	-	-	H-/H+d	-	Gramm-	-	st	-		-	-	NA	NA	-							5	c
3822	Paupiette de saumon	RTRH (salmon)	st	-	-	-		-	-	-		-	-	NA	NA	-							5	c
3826	Sublime de Hoki	RTRH (fish)	st	st	st	st		-	st	st		-	-	NA	NA	-							5	c
3916	Filet de bar cuisiné	RTRH fish	st	st	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	5	c
4110	Tranche de colin pané	RTRH hake	H-	+	H-	+	*L.welshimeri*	+	H-	+	*L.welshimeri*	+	+	PA	PA		H-	+	+	+	PA	PA	5	c
4113	Coquille de crabe	RTE crab	st	st	-	-		-	st	st		-	-	NA	NA	-							5	c
4117	Brochette poisson pané cru	RTRH fish	H+/H-	+	H+/H-	+	*L.monocytogenes/ L.innocua*	+	H+/H-	+	*L.monocytogenes/ L.innocua*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	5	c
4120	Filet de cabillaud	RTRH cod	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	5	c

FISH AND SEAFOOD																									
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1◆						Alternative method: LESS Plus broth Listeria spp method															Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C								
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h		
	en croute																							
4127	Pavé de lieu sauce citron riz	RTRH fish	st	st	st	st		-	st	st		-	-	NA	NA	-							5	c
4128	Pavé de saumon purée de brocolis	RTRH salmon	st	-	-	-		-	st	st		-	-	NA	NA	-							5	c
5782	Canapés au saumon	RTE (salmon)	-	-	-	-		-	st	st		-	-	NA	NA	-							5	c
5783	Mini choux escargot	RTE (snails)	-	-	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	5	c
5786	Sole meunière au beurre	RTRH fish	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	5	c
5787	Mini choux escargot	RTE (snails)	H+(1)	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	5	c
5889	Salade du pêcheur	Deli salad (seafood)	-	-	-	-		-	st	-		-	-	NA	NA	-							5	c
5890	Paupiette de saumon	RTC (salmon)	H-d(1)	-	-	-	Gram-	-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	5	c
5891	Coquille bretonne	RTRH (scallops)	H+	+	H+	+	*L.monocytogenes*	+	-	-		-	-	ND	ND	-	-	-	-	-	ND	ND	5	c
5892	Crevettes aromatisées	Seasoned shrimps	-	-	-	-		-	-	-		-	-	NA	NA	-							5	c
5893	Brins de surimi	Surimi	st	st	st	st		-	st	st		-	-	NA	NA	-							5	c

ENVIRONMENTAL SAMPLES																									
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1♦						Alternative method: LESS Plus broth Listeria spp method														Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C							
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h		
3237	Eau de process (végétaux)	Process water (vegetables)	st	st	st	st		-	st	st		-	-	NA	NA	-							6	a
3338	Eau de process (madeleine)	Process water (madeleine)	st	st	st	st		-	st	-		-	-	NA	NA	-							6	a
3555	Eau de rinçage laveuse	Rinse water	st	st	st	st		-	st	st		-	-	NA	NA	-							6	a
3556	Eau de rinçage peleuse	Rinse water	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	6	a
3566	Eau de process épineuse	Process water	st	st	st	st		-	st	st		-	-	NA	NA	-							6	a
3728	Eau de rinçage laveuse	Rinse water	H+/H-	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+/H- *(L.welshimerii)*	+	+	+	PA	PA	6	a
3729	Eau d'épineuse	Process water	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	6	a
3730	Eau de rinçage cuve PDL	Rinse water	H+(3)	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	6	a
3740	Eau de rinçage laveuse	Rinse water	H+/H-	+	H+/H-	+	*L.monocytogenes/ L.seeligeri*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+/H- *(L.welshimerii)*	+	+	+	PA	PA	6	a
3741	Eau épineuse	Process water	st	st	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	6	a
3742	Eau de rinçage cuve PDL	Rinse water	H-	+	H-	+	*L.innocua*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	6	a
4845	Eau de rinçage filets peleuse (industrie poisson)	Process water (Salmon industry)	st	st	st	st		-	st	st		-	-	NA	NA	-							6	a
4846	Eau rampe de désallage (industrie poisson)	Process water (Salmon industry)	st	st	st	st		-	st	st		-	-	NA	NA	-	st	st	-	-	NA	NA	6	a
4847	Eau rinçage après décaissage (industrie poisson)	Process water (Salmon industry)	st	st	-	-		-	st	-		-	-	NA	NA	-							6	a
4848	Eau fémia en cours de production (industrie légumes)	Process water (Salmon industry)	st	st	-	-		-	st	st		-	-	NA	NA	-							6	a
4849	Eau rinçage entre 2 recettes (industrie légumes)	Process water (Salmon industry)	st	st	st	st		-	-	-		-	-	NA	NA	-							6	a
4851	Eau rinçage entre 2 recettes (industrie légumes)	Process water (vegetables industry)	st	st	st	st		-	st	st		-	-	NA	NA	-	st	+(1) *L.innocua* (48 h)	-	+	NA	PD	6	a
5980	Eau pareuse (industrie poisson)	Process water (fish industry)	H+	+	H+	+	*L.monocytogenes*	+	-	st		-	-	ND	ND	-	-	-	-	-	ND	ND	6	a
5981	Eau épineuse (industrie poisson)	Process water (fish industry)	st	st	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	6	a
5982	Eau peleuse (industrie poisson)	Process water (fish industry)	st	st	st	st		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	6	a
5983	Eau laveuse (industrie poisson)	Process water (fish industry)	st	st	st	st		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	6	a

♦ Analyses performed according to the COFRAC accreditation

ENVIRONMENTAL SAMPLES																										
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1♦						Alternative method: LESS Plus broth Listeria spp method															Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C								
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h		
6320	Eau de rinçage filets peleuse (industrie poisson)	Process water (fish industry)	st	st	st	st		-	st	st		-	-	NA	NA	-							6	a
6321	Eau rampe de désallage (industrie poisson)	Process water (fish industry)	st	st	st	st		-	st	st		-	-	NA	NA	-							6	a
6322	Eau de rinçage après décaissage (industrie poisson)	Process water (fish industry)	st	st	st	st		-	st	st		-	-	NA	NA	-							6	a
3238	Déchets (végétaux)	Dusts (vegetables)	st	-	-	-		-	-	-		-	-	NA	NA	-							6	b
3567	Déchets atelier filetage	Dusts	st	st	st	st		-	st	st		-	-	NA	NA	-							6	b
3731	Eau de siphon laiterie	Siphon water	H+	+	H+	+	*L.monocytogenes*	+	st	st		-	-	ND	ND	-	st	st	-	-	ND	ND	6	b
3743	Eau de siphon laiterie	Siphon water	H-(2)	+(1)	H-	+	*L.innocua*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	6	b
4631	Filet en sortie de baadre (déchets saumon)	Wastes (salmon)	st	st	st	st		-	H-	+	*L.innocua*	+	+	PD	PD		H-	+	+	+	PD	PD	6	b
4632	Filets en sortie de désarêtage (déchets saumon)	Wastes (salmon)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	6	b
4850	Matière sortie prélèvement (industrie légumes)	Wastes (vegetables industry)	-	-	-	-		-	st	st		-	-	NA	NA	-							6	b
5018	Eau de siphon	Siphon water	st	st	st	st		-	st	st		-	-	NA	NA	-							6	b
5894	Déchets au sol haut filetage (industrie poisson)	Wastes (fish industry)	H-	+	H-	+	*L.welshimeri*	+	H-	+	*L.welshimeri*	+	+	PA	PA		H-	+	+	+	PA	PA	6	b
5895	Eau de siphon maturation/salage (industrie poisson)	Siphon water (fish industry)	-	-	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	6	b
5896	Déchets au sol bas filetage (industrie poisson)	Wastes (fish industry)	H-(2)	+	H-	+	*L.welshimeri*	+	-	-		-	-	ND	ND	-	st	st	-	-	ND	ND	6	b
5897	Eau de siphon bas filetage (industrie poisson)	Siphon water (fish industry)	H+/H-	+	H+/H-	+	*L.innocua/ L.welshimeri/ L.monocytogenes*	+	H+/H-	+	*L.monocytogenes/ L.welshimeri*	+	+	PA	PA		H+/H-	+	+	+	PA	PA	6	b
6121	Chiffonnette égout (industrie poisson)	Wipe (fish industry)	st	st	st	st		-	st	st		-	-	NA	NA	-							6	b
6122	Chiffonnette égout sous balance (industrie poisson)	Wipe (fish industry)	st	st	st	st		-	st	st		-	-	NA	NA	-							6	b
6948	Déchets végétaux (industrie salades)	Wastes (vegetables industry)	-	-	-	-		-	-	-		-	-	NA	NA	-							6	b
6949	Déchets végétaux (industrie salades)	Wastes (vegetables industry)	st	st	st	st		-	-	-		-	-	NA	NA	-							6	b
6950	Poussières laiteries	Dusts (dairy industry)	-	-	-	-		-	-	-		-	-	NA	NA	-							6	b
6951	Poussières laiteries	Dusts (dairy industry)	-	-	-	-		-	-	-		-	-	NA	NA	-							6	b
6952	Poussières	Dusts (dairy	-	-	-	-		-	-	-		-	-	NA	NA	-							6	b

ENVIRONMENTAL SAMPLES																										
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1♦						Alternative method: LESS Plus broth Listeria spp method															Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C								
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h		
	laiteries	industry)																						
6953	Poussières laiteries	Dusts (dairy industry)	-	-	-	-		-	st	-		-	-	NA	NA	-							6	b
3336	Chiffonnette avant rinçage (végétaux)	Wipe	st	st	st	st		-	st	st		-	-	NA	NA	-							6	c
3337	Chiffonnette plan de travail (madeleine)	Wipe	st	st	-	-		-	st	st		-	-	NA	NA	-							6	c
3553	Lingette tapis ligne	Wipe	st	st	st	st		-	st	st		-	-	NA	NA	-							6	c
3554	Lingette tapis ligne	Wipe	st	st	st	st		-	st	st		-	-	NA	NA	-							6	c
3562	Lingette tapis parage	Wipe	st	st	st	st		-	st	st		-	-	NA	NA	-							6	c
3563	Lingette tapis parage	Wipe	st	st	st	st		-	st	st		-	-	NA	NA	-							6	c
3564	Lingette tapis déchets peleuse	Wipe	st	st	st	st		-	st	st		-	-	NA	NA	-							6	c
3565	Lingette atelier poussée tranchage	Wipe	st	st	st	st		-	st	st		-	-	NA	NA	-							6	c
3692	Chiffonnette tapis de parage après désinfection	Wipe	st	st	st	st		-	H-	+	*L.innocua*	+	+	PD	PD		H-	+	+	+	PD	PD	6	c
3693	Chiffonnette maille sortie parage	Wipe	H-(3)	+(4)	H-	+	*L.innocua*	+	H-	+	*L.innocua*	+	+	PA	PA		H-	+	+	+	PA	PA	6	c
4841	Chiffonnette tapis sortie baadre (industrie poisson)	Wipe (salmon industry)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	6	c
4842	Chiffonnette égoût sous balance (industrie poisson)	Wipe (salmon industry)	st	st	st	st		-	H+	+	*L.monocytogenes*	+	+	PD	PD		H+	+	+	+	PD	PD	6	c
4843	Chiffonnette sol frigo (industrie poisson)	Wipe (salmon industry)	st	st	st	st		-	st	st		-	-	NA	NA	-							6	c
4844	Chiffonnette peau saumon (industrie poisson)	Wipe (salmon industry)	H+	+	H+	+	*L.monocytogenes*	+	st	st		-	-	ND	ND	-	st	st	-	-	ND	ND	6	c
4852	Chiffonnette passe plat taboulé (industrie légumes)	Wipe (vegetables industry)	st	st	-	-		-	-	st		-	-	NA	NA	-	st	st	-	-	NA	NA	6	c
4853	Chiffonnette intérieur chariot oignons surgelés (industrie légumes)	Wipe (vegetables industry)	st	st	-	-		-	-	-		-	-	NA	NA	-							6	c
4854	Chiffonnette sol (industrie légumes)	Wipe (vegetables industry)	H+	+	H+	+	*L.monocytogenes*	+	H+	+	*L.monocytogenes*	+	+	PA	PA		H+	+	+	+	PA	PA	6	c
4855	Chiffonnette sol (industrie légumes)	Wipe (vegetables industry)	st	st	-	-		-	st	st		-	-	NA	NA	-							6	c
5019	Lingette après nettoyage	Wipe after cleaning	st	st	st	st		-	st	st		-	-	NA	NA	-							6	c

ENVIRONMENTAL SAMPLES																											
Sample number	Product (French name)	Product	Reference method: ISO 11290-1/A1◆						Alternative method: LESS Plus broth Listeria spp method																Cate-gory	Type
			Half Fraser		Fraser 1		Identification	Listeria spp result	LESS Plus broth - 22 h at 30°C ±1°C							Reference method on LESS broth of the alternative method	LESS Plus broth storage for 72 h at 2 - 8°C									
			O&A	Palcam	O&A	Palcam			O&A 24 h	Palcam 24 h or 48 h	Confirmation tests (ISO)	Final result O&A	Final result Palcam	Agreement Ref/Alt O&A	Agreement Ref/Alt Palcam		O&A 24 h	Palcam 24 h or 48 h	Final result O&A 72h	Final result Palcam 72h	Agreement Ref/Alt O&A 72h	Agreement Ref/Alt Palcam 72h				
5898	Chiffonnette tapis déchets fileteuse (industrie poisson)	Wipe (fish industry)	st	st	st	st		-	-	-		-	-	NA	NA	-							6	c
5899	Chiffonnette tapis parage P1+ (industrie poisson)	Wipe (fish industry)	H-	+	H-	+	*L.welshimeri*	+	-	-		-	-	ND	ND	-	-	-	-	-	ND	ND	6	c
5900	Chiffonnette tapis parage n°2 (industrie poisson)	Wipe (fish industry)	st	-	st	st		-	-	-		-	-	NA	NA	-							6	c
5901	Chiffonnette tapis épineuse (industrie poisson)	Wipe (fish industry)	st	st	st	st		-	st	st		-	-	NA	NA	-							6	c
5902	Chiffonnette tapis parage n°1 (industrie poisson)	Wipe (fish industry)	H-	+	H-	+	*L.welshimeri*	+	H-	+	*L.welshimeri*	+	+	PA	PA		H-	+	+	+	PA	PA	6	c
5984	Chiffonnette tapis déchets peleuse (industrie poisson)	Wipe (fish industry)	H+	+	H+	+	*L.monocytogenes*	+	H-	+	*L.welshimeri*	+	+	PA	PA		H-	+	+	+	PA	PA	6	c
5985	Chiffonnette tapis trancheur ligne (industrie poisson)	Wipe (fish industry)	H+	+	H+	+	*L.monocytogenes*	+	st	st		-	-	ND	ND	-	st	st	-	-	ND	ND	6	c
5986	Chiffonnette tapis pareuse (industrie poisson)	Wipe (fish industry)	H+(2)	+(1)	H+	+	*L.monocytogenes*	+	st	st		-	-	ND	ND	-	st	st	-	-	ND	ND	6	c
6119	Chiffonnette réservoir inox (industrie poisson)	Wipe (fish industry)	st	st	st	st		-	st	st		-	-	NA	NA	-							6	c
6120	Chiffonnette grille inox entêteuse	Wipe (fish industry)	st	st	st	st		-	st	st		-	-	NA	NA	-							6	c
6318	Chiffonnette atelier plan de travail (fabrication madeleine)	Wipe (pastry indsutry)	st	st	st	st		-	st	st		-	-	NA	NA	-							6	c
6319	Chiffonnette égout sous balance (industrie poisson)	Wipe (fish industry)	st	st	st	st		-	st	st		-	-	NA	NA	-							6	c

Appendix E

Relative level of detection study: raw data

H-: characteristic *Listeria* colonies without halo
H+: characteristic *Listeria* colonies with halo
-: no typical colonies but presence of background microflora
+: typical colonies
st: plate without any colony
NC: non characteristic colony on TSYEA

Piémontaise (aerobic mesophilic flora: 1,2 10^6cfu/g)
L.seeligeri Ad1293

N° Sample	Level	Inoculation (cfu/25g)	Reference method: ISO 11290-1/A1 ♦						Alternative method: LESS Plus Broth Listeria spp					
			O&A	Palcam	O&A	Palcam	Result	Positive/total	O&A	Palcam	Confirmation	Final result O&A	Final result Palcam	Positive/Total
6449	0	0	st	st	st	-	-	0/5	st	st	-	-	-	0/5
6450			st	st	st	st	-		st	st	-	-	-	
6451			st	st	st	st	-		st	st	-	-	-	
6452			st	st	st	st	-		st	st	-	-	-	
6453			st	st	st	st	-		st	st	-	-	-	
6454	1	0.32	st	st	st	st	-	3/20	H-	+	+	+	+	7/20
6455			st	st	st	st	-		H-	+	+	+	+	
6456			st	st	st	st	-		H-(1)	+(2)	+	+	+	
6457			H-	+	H-	+	+		-	st	-	-	-	
6458			H-	+	H-	+	+		-	st	-	-	-	
6459			st	st	st	st	-		-	st	-	-	-	
6460			st	st	st	-	-		-	st	-	-	-	
6461			st	st	H-(NC)	+ (NC)	-		H-	+	+	+	+	
6462			st	st	st	st	-		st	st	-	-	-	
6463			st	st	st	st	-		st	st	-	-	-	
6464			st	st	st	st	-		st	st	-	-	-	
6465			st	st	st	-	-		H-	+	+	+	+	
6466			st	st	st	st	-		st	st	-	-	-	
6467			st	st	H-(NC)	+ (NC)	-		H-	+	+	+	+	
6468			st	st	st	st	-		st	st	-	-	-	
6469			H-	+	H-	+	+		st	st	-	-	-	
6470			st	st	st	st	-		H-	+	+	+	+	
6471			st	st	st	st	-		st	st	-	-	-	
6472			st	st	st	st	-		st	st	-	-	-	
6473			st	st	st	st	-		st	st	-	-	-	
6474	2	0.9	H-	+	H-	+	+	5/5	H-	+	+	+	+	4/5
6475			H-	+	H-	+	+		st	st	-	-	-	
6476			H-	+	H-	+	+		H-	+	+	+	+	
6477			H-	+	H-	+	+		H-	+	+	+	+	
6478			H-	+	H-	+	+		H-	+	+	+	+	

Rillettes (aerobic mesophilic flora: 1,6 10^2cfu/g)
L.monocytogenes Ad669

N°Sample	Level	Inoculation (cfu/25g)	Reference method: ISO 11290-1/A1 ♦						Alternative method: LESS Plus Broth Listeria spp					
			Half Fraser		Fraser 1		Result	Positive/total						
			O&A	Palcam	O&A	Palcam			O&A	Palcam	Confirmation	Final result O&A	Final result Palcam	Positive/Total
5800	0	0	st	st	st	st	-	0/5	st	st	-	-	-	0/5
5801			st	st	-	-	-		st	st	-	-	-	
5802			st	st	st	st	-		st	st	-	-	-	
5803			st	st	st	st	-		st	st	-	-	-	
5804			st	st	st	-	-		st	st	-	-	-	
5805	1	0.2	st	st	st	-	-	6/20	st	st	-	-	-	6/20
5806			st	st	st	-	-		H+	+	+	+	+	
5807			st	st	st	st	-		st	st	-	-	-	
5808			st	st	st	-	-		st	st	-	-	-	
5809			H+	+	H+	+	+		H+	+	+	+	+	
5810			st	st	st	-	-		H+	+	+	+	+	
5811			st	st	st	-	-		st	st	-	-	-	
5812			st	st	st	-	-		st	st	-	-	-	
5813			st	st	st	st	-		st	st	-	-	-	
5814			st	st	st	st	-		st	st	-	-	-	
5815			H+	+	H+	+	+		H+	+	+	+	+	
5816			H+	+	H+	+	+		st	st	-	-	-	
5817			H+	+	H+	+	+		st	st	-	-	-	
5818			H+	+	H+	+	+		st	st	-	-	-	
5819			st	st	-	-	-		st	st	-	-	-	
5820			H+	+	H+	+	+		H+	+	+	+	+	
5821			st	st	st	-	-		st	st	-	-	-	
5822			st	st	st	st	-		st	st	-	-	-	
5823			st	st	st	-	-		st	st	-	-	-	
5824			st	st	st	st	-		H+	+	+	+	+	
5825	2	0.5	st	st	st	-	-	2/5	H+	+	+	+	+	3/5
5826			H+	+	H+	+	+		H+	+	+	+	+	
5827			st	st	st	-	-		st	st	-	-	-	
5828			st	st	st	-	-		H+	+	+	+	+	
5829			H+	+	H+	+	+		st	st	-	-	-	

Raw milk cheese -Brie de Meaux- (aerobic mesophilic flora: 2,4 10^8 cfu/g)
L.innocua Ad636

N°Sample	Level	Inoculation (cfu/25g)	Reference method: ISO 11290-1/A1 ♦						Alternative method: LESS Plus Broth Listeria spp					
			Half Fraser		Fraser 1		Result	Positive/total						
			O&A	Palcam	O&A	Palcam			O&A	Palcam	Confirmation	Final result O&A	Final result Palcam	Positive/Total
5830	0	0	st	-	-	-	-	0/5	-	-	-	-	-	0/5
5831			st	-	st	-	-		-	-	-	-	-	
5832			-	-	-	-	-		-	-	-	-	-	
5833			-	-	st	-	-		-	-	-	-	-	
5834			-	-	st	-	-		-	-	-	-	-	
5835	1	0.45	H-	+	H-	+	+	5/20	H-	+	+	+	+	09/20
5836			-	-	st	-	-		-	-	-	-	-	
5837			-	-	st	-	-		-	-	-	-	-	
5838			-	-	-	-	-		H-	+	+	+	+	
5839			-	-	-	-	-		H-	+	+	+	+	
5840			-	-	-	-	-		H-	+	+	+	+	
5841			st	-	st	-	-		-	-	-	-	-	
5842			st	-	-	-	-		H-	+	+	+	+	
5843			-	-	-	-	-		-	-	-	-	-	
5844			-	-	-	-	-		H-	+	+	+	+	
5845			H-	+	H-	+	+		-	-	-	-	-	
5846			H-	+	H-	+	+		H-	+	+	+	+	
5847			H-	+	H-	+	+		-	-	-	-	-	
5848			-	-	st	st	-		-	-	-	-	-	
5849			-	-	-	-	-		-	-	-	-	-	
5850			st	-	-	-	-		H-	+	+	+	+	
5851			H-	+	H-	+	+		-	-	-	-	-	
5852			st	-	st	-	-		H-	+	+	+	+	
5853			st	-	-	-	-		-	-	-	-	-	
5854			H-	+	H-	+	+		-	-	-	-	-	
5855	2	1.3	st	-	-	-	-	1/5	H-	+	+	+	+	5/5
5856			H-	+	H-	+	+		H-	+	+	+	+	
5857			-	-	-	-	-		H-	+	+	+	+	
5858			-	-	-	-	-		H-	+	+	+	+	
5859			-	-	-	-	-		H-	+	+	+	+	

Vegetables mix (aerobic mesophilic flora: 6,0 10^2 cfu/g)
L.monocytogenes Ad279

N°Sample	Level	Inoculation(cfu/25g)	Reference method: ISO 11290-1/A1 ♦						Alternative method: LESS Plus Broth Listeria spp					
			Half Fraser		Fraser 1		Result	Positive/total						
			O&A	Palcam	O&A	Palcam			O&A	Palcam	Confirmation	Final result O&A	Final result Palcam	Positive/Total
6624	0	0	st	st	st	st	-	0/5	st	st	-	-	-	0/5
6625			st	st	st	st	-		st	st	-	-	-	
6626			-	-	-	-	-		st	st	-	-	-	
6627			st	st	st	st	-		-	st	-	-	-	
6628			st	st	st	st	-		st	st	-	-	-	
6629	1	0.8	st	st	st	st	-	8/20	st	st	-	-	-	11/20
6630			st	st	st	st	-		st	st	-	-	-	
6631			st	st	st	st	-		H+	+	+	+	+	
6632			H+	+	H+	+	+		st	+	-	-	-	
6633			st	st	st	st	-		H+	+	+	+	+	
6634			st	st	st	st	-		H+	+	+	+	+	
6635			st	st	st	st	-		H+	+	+	+	+	
6636			H+	+	H+	+	+		H+	+	+	+	+	
6637			H+	+	H+	+	+		H+	+	+	+	+	
6638			H+	+	H+	+	+		st	st	-	-	-	
6639			H+	+	H+	+	+		H+	+	+	+	+	
6640			H+	+	H+	+	+		st	st	-	-	-	
6641			st	st	st	st	-		H+	+	+	+	+	
6642			st	st	st	st	-		H+	+	+	+	+	
6643			st	st	st	st	-		st	st	-	-	-	
6644			st	st	st	st	-		H+	+	+	+	+	
6645			H+	+	H+	+	+		st	st	-	-	-	
6646			st	st	st	st	-		st	st	-	-	-	
6647			H+	+	H+	+	+		H+	+	+	+	+	
6648			st	st	st	st	-		st	st	-	-	-	
6649	2	2.1	H+	+	H+	+	+	5/5	H+	+	+	+	+	5/5
6650			H+	+	H+	+	+		H+	+	+	+	+	
6651			H+	+	H+	+	+		H+	+	+	+	+	
6652			H+	+	H+	+	+		H+	+	+	+	+	
6653			H+	+	H+	+	+		H+	+	+	+	+	

Smoked salmon fish (aerobic mesophilic flora:1,2.10^3 cfu/g)
L.welshimeri Ad1669

N°Sample	Level	Inoculation(cfu/25g)	Reference method: ISO 11290-1/A1 ♦						Alternative method: LESS Plus Broth Listeria spp					
			Half Fraser		Fraser 1		Result	Positive/total						
			O&A	Palcam	O&A	Palcam			O&A	Palcam	Confirmation	Final result O&A	Final result Palcam	Positive/Total
6793	0	0	st	st	-	-	-	0/5	st	-	-	-	-	0/5
6794			st	-	-	-	-		st	-	-	-	-	
6795			-	-	-	-	-		st	-	-	-	-	
6796			-	-	-	-	-		st	-	-	-	-	
6797			-	-	-	-	-		st	-	-	-	-	
6768	1	0.4	st	-	st	st	-	5/20	H-	+	+	+	+	4/20
6769			-	-	-	-	-		-	-	-	-	-	
6770			st	st	-	-	-		st	-	-	-	-	
6771			st	-	-	-	-		-	-	-	-	-	
6772			st	st	st	-	-		-	-	-	-	-	
6773			st	st	-	-	-		st	st	-	-	-	
6774			st	-	-	-	-		st	-	-	-	-	
6775			st	-	-	-	-		-	-	-	-	-	
6776			-	-	-	-	-		-	-	-	-	-	
6777			H-	+	/	/	+		-	-	-	-	-	
6778			H-	+	/	/	+		-	-	-	-	-	
6779			st	st	-	-	-		-	-	-	-	-	
6780			st	st	-	-	-		-	-	-	-	-	
6781			st	st	-	-	-		st	-	-	-	-	
6782			H-	+	/	/	+		H-	+	+	+	+	
6783			H-	+	/	/	+		-	-	-	-	-	
6784			H-	+	/	/	+		H-	+	+	+	+	
6785			st	st	-	-	-		H-	+	+	+	+	
6786			st	st	-	-	-		st	-	-	-	-	
6787			-	st	-	-	-		st	-	-	-	-	
6788	2	1.8	H-	+	/	/	+	3/5	H-	+	+	+	+	3/5
6789			st	st	-	-	-		st	st	-	-	-	
6790			H-	+	/	/	+		H-	+	+	+	+	
6791			H-	+	/	/	+		H-	+	+	+	+	
6792			st	st	st	st	-		st	-	-	-	-	

Process water (aerobic mesophilic flora: 1,4.10^3 cfu/g)
L.monocytogenes Ad551

N°Sample	Level	Inoculation(cfu/25g)	Reference method: ISO 11290-1/A1 ♦						Alternative method: LESS Plus Broth Listeria spp					
			Half Fraser		Fraser 1		Result	Positive/total						
			O&A	Palcam	O&A	Palcam			O&A	Palcam	Confirmation	Final result O&A	Final result Palcam	Positive/Total
6914	0	0	st	st	-	-	-	0/5	st	st	-	-	-	0/5
6915			st	st	st	st	-		st	st	-	-	-	
6916			st	st	st	st	-		st	st	-	-	-	
6917			st	st	st	st	-		st	st	-	-	-	
6918			st	st	st	st	-		st	st	-	-	-	
6919	1	0.6	st	st	st	st	-	7/20	H+	+	+	+	+	9/20
6920			st	st	st	st	-		st	st	-	-	-	
6921			st	st	st	st	-		st	st	-	-	-	
6922			st	st	-	-	-		H+	+	+	+	+	
6923			H+	+(3)	/	/	+		st	st	-	-	-	
6924			st	st	st	st	-		H+	+	+	-	+	
6925			st	st	st	st	-		st	st	-	-	-	
6926			H+	+	/	/	+		st	st	-	-	-	
6927			st	st	st	-	-		st	st	-	-	-	
6928			st	st	st	st	-		H+	+	+	+	+	
6929			st	st	st	st	-		H+	+	+	+	+	
6930			H+(1)	st	/	st	+		st	st	-	-	-	
6931			st	st	st	st	-		st	st	-	-	-	
6932			H+	+	/	/	+		st	st	-	-	-	
6933			st	st	st	st	-		H+	+	+	+	+	
6934			H+	+	/	/	+		H+	+	+	+	+	
6935			H+(4)	+	/	/	+		H+	+	+	+	+	
6936			st	st	st	st	-		st	st	-	-	-	
6937			H+	+	/	/	+		H+	+	+	+	+	
6938			st	st	st	st	-		st	st	-	-	-	
6939	2	1.6	H+	+	/	/	+	4/5	H+	+	+	+	+	4/5
6940			H+	+	/	/	+		H+	+	+	+	+	
6941			H+	+	/	/	+		st	st	-	-	-	
6942			st	st	st	st	-		H+	+	+	+	+	
6943			H+	+	/	/	+		H+	+	+	+	+	

Appendix F – Inclusivity and exclusivity study: raw data

H-: characteristic *Listeria* colonies without halo
H+: characteristic *Listeria* colonies with halo
-: presence of atypical colonies
+: presence of typical colonies
st: no growth on the plates

INCLUSIVITY								
N°	Strain	Species	Reference	Origin	Inoculation level (CFU/225ml)	O&A 24h/48h	Palcam 24h/48h	Confirmation
1	*Listeria*	*grayi*	Ad 1198	Smoked salmon	33	H-	st	+
2	*Listeria*	*grayi*	Ad 1443	Pork meat sausages	62	H-	st	+
3	*Listeria*	*innocua*	1	Smoked salmon	32	H-	+	+
4	*Listeria*	*innocua*	Ad 658	Gorgonzola	57	H-	+	+
5	*Listeria*	*innocua*	Ad 655	Brine	5	H-	+	+
6	*Listeria*	*innocua*	Ad 660	Bread crumbs	5	H-	+	+
7	*Listeria*	*innocua*	Ad 663	Environment (dairy industry)	12	H-	+	+
8	*Listeria*	*innocua*	Ad 671	Smoked bacon	16	H-	+	+
9	*Listeria*	*innocua*	Ad 661	Soft cheese (Pont L'Evêque)	48	H-	+	+
10	*Listeria*	*innocua*	Ad 659	Environment (dairy industry)	58	H-	+	+
11	*Listeria*	*ivanovii*	Ad 466	Raw veal meat	23	H+	+	+
12	*Listeria*	*ivanovii*	Ad 662	Environment (dairy industry)	26	H+	+	+
13	*Listeria*	*ivanovii*	BR11	Environment (fish)	50	H+d/H+	+d/+	+
14	*Listeria*	*ivanovii londoniensis*	CIP103466	/	63	H+	+	+
15	*Listeria*	*ivanovii*	Ad 1289	Raw milk cheese	62	H+	+	+
16	*Listeria*	*ivanovii*	Ad 1290	Milk powder	56	H+ pale /H+	+d/+	+
17	*Listeria*	*ivanovii*	Ad 1291	Poultry	87	H+d/H+	+d/+	+

INCLUSIVITY								
N°	Strain	Species	Reference	Origin	Inoculation level (CFU/225ml)	O&A 24h/48h	Palcam 24h/48h	Confirmation
18	*Listeria*	*ivanovii*	Ad 1288	Sheep milk	28	H+	+	+
19	*Listeria*	*seeligeri*	Ad 649	Cheese	63	H-	+	+
20	*Listeria*	*seeligeri*	Ad 651	Environment	41	H-	+	+
21	*Listeria*	*seeligeri*	Ad 652	Environment (dairy industry)	59	µcolonies/H-	+d/+	+
22	*Listeria*	*seeligeri*	Ad 674	Soft cheese (Munster)	36	H-	+	+
23	*Listeria*	*seeligeri*	BR1	Trout	47	µcolonies/H-	+d/+	+
24	*Listeria*	*seeligeri*	BR18	Environment (fish)	38	µcolonies/H-	+d/+	+
25	*Listeria*	*seeligeri*	CIP100100	/	20	µcolonies/H-	+d/+	+
26	*Listeria*	*welshimeri*	Ad1276	Environment (Slaughterhouse)	100	H-	+	+
27	*Listeria*	*welshimeri*	Ad1235	Beef meat	71	H-	+	+
28	*Listeria*	*welshimeri*	191424	Poultry	80	H-	+	+
29	*Listeria*	*welshimeri*	Ad 1175	Ready-to-eat-food	62	H-	+	+
30	*Listeria*	*welshimeri*	Ad 650	Poultry	44	H-	+	+
31	*Listeria*	*monocytogenes*	1011/1410	Frozen broccoli	33	H+	+	+
32	*Listeria*	*monocytogenes*	153	Soft cheese (Munster)	48	H+	+	+
33	*Listeria*	*monocytogenes*	1973/2400	Egg and ham pastry (Quiche Lorraine)	49	H+	+	+
34	*Listeria*	*monocytogenes*	38/181	Toulouse sausages	43	H+	+	+
35	*Listeria*	*monocytogenes*	7111/7516	Pâté (Rillettes)	74	H+	+	+
36	*Listeria*	*monocytogenes*	913/1048	Black pudding	41	H+	+	+
37	*Listeria*	*monocytogenes*	A00C036	Poultry (guinea)	86	H+	+	+
38	*Listeria*	*monocytogenes*	A00C041	Sausage	54	H+	+	+
39	*Listeria*	*monocytogenes*	A00C044	Poultry (Duck)	32	H+	+	+
40	*Listeria*	*monocytogenes*	A00L097	Milk	45	H+	+	+
41	*Listeria*	*monocytogenes*	A00M009	Smoked salmon	35	H+	+	+
42	*Listeria*	*monocytogenes*	Ad 253	Semi-hard cheese	42	H+	+	+

INCLUSIVITY								
N°	Strain	Species	Reference	Origin	Inoculation level (CFU/225ml)	O&A 24h/48h	Palcam 24h/48h	Confirmation
43	*Listeria*	*monocytogenes*	Ad 266	Poultry	34	H+	+	+
44	*Listeria*	*monocytogenes*	Ad 270	Fermented sausage	33	H+	+	+
45	*Listeria*	*monocytogenes*	Ad 273	Cured delicatessen	25	H+	+	+
46	*Listeria*	*monocytogenes*	Ad 274	Ready-to-eat food (Asiatic meal)	29	H+	+	+
47	*Listeria*	*monocytogenes*	Ad 534	Fruits	31	H+	+	+
48	*Listeria*	*monocytogenes*	Ad 548	Environment (Seafood)	49	H+	+	+
49	*Listeria*	*monocytogenes*	Ad 623	Bread crumbs	19	H+	+	+
50	*Listeria*	*monocytogenes*	Ad 665	Raw milk	64	H+	+	+

EXCLUSIVITY							
	Strain	Species	Reference	Origin	Inoculation level (CFU/ml)	O&A	Palcam
1	*Bacillus*	*cereus*	Ad 465	Salmon Terrine	$6.0\ 10^3$	st	st
2	*Bacillus*	*circulans*	Ad 760	Vegetables	$2.0\ 10^3$	-	st
3	*Bacillus*	*coagulans*	Ad 731	Dairy product	$2.0\ 10^3$	st	st
4	*Bacillus*	*licheniformis*	Ad 978	Dairy product	$2.0\ 10^3$	-	-
5	*Bacillus*	*mycoïdes*	Ad 762	Milk	$5.1\ 10^5$	st	st
6	*Bacillus*	*pseudomycoides*	Ad 765	Vegetables	$2.0\ 10^3$	st	st
7	*Bacillus*	*pumilus*	Ad 284	Ready-to-eat	$3.4\ 10^4$	-	-
8	*Bacillus*	*weihenstephanensis*	Ad 726	Egg product	$2.0\ 10^3$	st	st
9	*Brochothrix*	*thermosphacta*	EN 15129	Trout	$4.0\ 10^4$	st	st
10	*Brochrotrix*	*compessis*	CIP 102920^T	Environment	$4.6\ 10^5$	st	st
11	*Carnobacterium*	*divergens*	CIP 101029^T		$2.0\ 10^5$	st	st
12	*Carnobacterium*	*piscicola*	Ad 369	Raw milk	$2.0\ 10^5$	st	st
13	*Enterococcus*	*durans*	Ad 149	Ham	$2.0\ 10^5$	st	st
14	*Enterococcus*	*faecalis*	89L326	Soft cheese (Vacherin)	$2.8\ 10^5$	st	st
15	*Lactobacillus*	*brevis*	86L126	Ham	$2.4\ 10^5$	st	st
16	*Lactobacillus*	*curvatus*	Ad 380	Delicatessen	$1.4\ 10^5$	st	st
17	*Lactobacillus*	*fermentum*	Ad 482	Tomatoes juice	$3.9\ 10^5$	st	st
18	*Lactobacillus*	*sakei*	Ad 473	Ham	$1.0\ 10^5$	st	st
19	*Lactococcus*	*lactis subsp cremoris*	Ad 137	Dairy product	$2.0\ 10^5$	st	st
20	*Leuconostoc*	*carnosum*	Ad 411	Ham	$3.2\ 10^4$	st	st
21	*Leuconostoc*	*citreum*	Ad 396	Ham	$4.0\ 10^3$	st	st
22	*Micrococcus*	*luteus*	Ad 432	Cocktail	$2.0\ 10^3$	st	st/-
23	*Pediococcus*	*pentosaceus*	ATCC 33316		$4.4\ 10^4$	st	st
24	*Propionibacterium*	*freundenreichii*	CNRZ 725	Dairy product	$5.2\ 10^4$	st	st
25	*Staphylococcus*	*aureus*	Ad 165	Smoked delicatessen	$4.0\ 10^5$	st	-
26	*Staphylococcus*	*aureus*	Ad 902	Nems	$4.0\ 10^5$	-	-
27	*Staphylococcus*	*epidermidis*	Ad 931	Fruits	$6.0\ 10^5$	st	st
28	*Staphylococcus*	*haemoliticus*	Ad 989	Dairy product	$2.0\ 10^4$	st/-	-
29	*Streptococcus*	*bovis*	92L622	Dairy product	$1.6\ 10^5$	st	st
30	*Streptococcus*	*salivarius sps thermophilus*	Ad 441	Dairy product	$6.0\ 10^3$	st	st

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

Laboratory A

Aerobic mesophilic flora: $2,7.10^8$/g

N°Sample	Reference method: ISO 11290-1					Alternative method: LESS Plus Broth Listeria spp			Agreement
	Half Fraser		Fraser		Final result	O&A	Palcam	Final result	
	O&A	Palcam	O&A	Palcam					
A4	-	-	-	-	-	-	-	-	NA
A7	-	-	-	-	-	-	-	-	NA
A9	-	-	-	-	-	-	-	-	NA
A10	-	-	-	-	-	-	-	-	NA
A13	-	-	-	-	-	-	-	-	NA
A18	-	-	-	-	-	-	-	-	NA
A23	-	-	-	-	-	-	-	-	NA
A24	-	-	-	-	-	-	-	-	NA
A2	-	+	+	+	+	+	+	+	PA
A3	+	+	+	+	+	+	+	+	PA
A8	+	+	+	+	+	+	+	+	PA
A12	-	-	-	-	-	-	-	-	NA
A15	+	+	+	+	+	+	+	+	PA
A17	-	-	-	-	-	+	+	+	PD
A19	+	+	+	+	+	+	+	+	PA
A21	+	+	+	+	+	+	+	+	PA
A1	+	+	+	+	+	+	+	+	PA
A5	+	+	+	+	+	+	+	+	PA
A6	+	+	+	+	+	+	+	+	PA
A11	+	+	+	+	+	+	+	+	PA
A14	+	+	+	+	+	+	+	+	PA
A16	+	+	+	+	+	+	+	+	PA
A20	+	+	+	+	+	+	+	+	PA
A22	+	+	+	+	+	+	+	+	PA

Laboratory B

Aerobic mesophilic flora: 2,0.10⁸/g

N°Sample	Reference method: ISO 11290-1					Alternative method: LESS Plus Broth Listeria spp			Agreement
	Half Fraser		Fraser		Final result	O&A	Palcam	Final result	
	O&A	Palcam	O&A	Palcam					
B4	-	-	-	-	-	-	-	-	NA
B7	-	-	-	-	-	-	-	-	NA
B9	-	-	-	-	-	-	-	-	NA
B10	-	-	-	-	-	-	-	-	NA
B13	-	-	-	-	-	-	-	-	NA
B18	-	-	-	-	-	-	-	-	NA
B23	-	-	-	-	-	-	-	-	NA
B24	-	-	-	-	-	-	-	-	NA
B2	+	+	+	+	+	+	+	+	PA
B3	+	+	+	+	+	+	+	+	PA
B8	-	-	-	-	-	+	+	+	PD
B12	+	+	+	+	+	+	+	+	PA
B15	+	+	+	+	+	-	-	-	ND
B17	+	+	+	+	+	+	+	+	PA
B19	+	+	+	+	+	+	+	+	PA
B21	+	+	+	+	+	+	+	+	PA
B1	+	+	+	+	+	+	+	+	PA
B5	+	+	+	+	+	+	+	+	PA
B6	+	+	+	+	+	+	+	+	PA
B11	+	+	+	+	+	+	+	+	PA
B14	+	+	+	+	+	+	+	+	PA
B16	+	+	+	+	+	+	+	+	PA
B20	+	+	+	+	+	+	+	+	PA
B22	+	+	+	+	+	+	+	+	PA

Laboratory C

Aerobic mesophilic flora: 6,5.10⁶/g

N°Sample	Reference method: ISO 11290-1					Alternative method: LESS Plus Broth Listeria spp			Agreement
	Half Fraser		Fraser		Final result	O&A	Palcam	Final result	
	O&A	Palcam	O&A	Palcam					
C4	-	-	-	-	-	-	-	-	NA
C7	-	-	-	-	-	-	-	-	NA
C9	-	-	-	-	-	-	-	-	NA
C10	-	-	-	-	-	-	-	-	NA
C13	-	-	-	-	-	-	-	-	NA
C18	-	-	-	-	-	-	-	-	NA
C23	-	-	-	-	-	-	-	-	NA
C24	-	-	-	-	-	-	-	-	NA
C2	+	+	+	+	+	+	+	+	PA
C3	+	+	+	+	+	+	+	+	PA
C8	+	+	+	+	+	+	+	+	PA
C12	+	+	+	+	+	+	+	+	PA
C15	+	+	+	+	+	+	+	+	PA
C17	+	+	+	+	+	-	-	-	ND
C19	+	+	+	+	+	+	+	+	PA
C21	+	+	+	+	+	+	+	+	PA
C1	+	+	+	+	+	+	+	+	PA
C5	+	+	+	+	+	+	+	+	PA
C6	+	+	+	+	+	+	+	+	PA
C11	+	+	+	+	+	+	+	+	PA
C14	+	+	+	+	+	+	+	+	PA
C16	+	+	+	+	+	+	+	+	PA
C20	+	+	+	+	+	+	+	+	PA
C22	+	+	+	+	+	+	+	+	PA

Laboratory D

Aerobic mesophilic flora:2,3.10^8 /g

N°Sample	Reference method: ISO 11290-1					Alternative method: LESS Plus Broth Listeria spp			Agreement
	Half Fraser		Fraser		Final result	O&A	Palcam	Final result	
	O&A	Palcam	O&A	Palcam					
D4	-	-	-	-	-	-	-	-	NA
D7	-	-	-	-	-	-	-	-	NA
D9	-	-	-	-	-	-	-	-	NA
D10	-	-	-	-	-	-	-	-	NA
D13	-	-	-	-	-	-	-	-	NA
D18	-	-	-	-	-	-	-	-	NA
D23	-	-	-	-	-	-	-	-	NA
D24	-	-	-	-	-	-	-	-	NA
D2	+	+	+	+	+	+	+	+	PA
D3	+	+	+	+	+	+	+	+	PA
D8	+	+	+	+	+	+	+	+	PA
D12	+	+	+	+	+	+	+	+	PA
D15	+	+	+	+	+	+	+	+	PA
D17	+	+	+	+	+	+	+	+	PA
D19	+	+	+	+	+	+	+	+	PA
D21	+	+	+	+	+	+	+	+	PA
D1	+	+	+	+	+	+	+	+	PA
D5	+	+	+	+	+	+	+	+	PA
D6	+	+	+	+	+	+	+	+	PA
D11	+	+	+	+	+	+	+	+	PA
D14	+	+	+	+	+	+	+	+	PA
D16	+	+	+	+	+	+	+	+	PA
D20	+	+	+	+	+	+	+	+	PA
D22	+	+	+	+	+	+	+	+	PA

Laboratory E

Aerobic mesophilic flora: 2,1.10^{8}/g

N°Sample	Reference method: ISO 11290-1					Alternative method: LESS Plus Broth Listeria spp			Agreement
	Half Fraser		Fraser		Final result	O&A	Palcam	Final result	
	O&A	Palcam	O&A	Palcam					
E4	-	-	-	-	-	-	-	-	NA
E7	-	-	-	-	-	-	-	-	NA
E9	-	-	-	-	-	-	-	-	NA
E10	-	-	-	-	-	-	-	-	NA
E13	-	-	-	-	-	-	-	-	NA
E18	-	-	-	-	-	-	-	-	NA
E23	-	-	-	-	-	-	-	-	NA
E24	-	-	-	-	-	-	-	-	NA
E2	+	+	+	+	+	+	+	+	PA
E3	-	-	-	-	-	+	+	+	PD
E8	+	+	+	+	+	+	+	+	PA
E12	+	+	+	+	+	+	+	+	PA
E15	+	+	+	+	+	-	-	-	ND
E17	+	+	+	+	+	+	+	+	PA
E19	+	+	+	+	+	+	+	+	PA
E21	+	+	+	+	+	+	+	+	PA
E1	+	+	+	+	+	+	+	+	PA
E5	+	+	+	+	+	+	+	+	PA
E6	+	+	+	+	+	+	+	+	PA
E11	+	+	+	+	+	+	+	+	PA
E14	+	+	+	+	+	+	+	+	PA
E16	+	+	+	+	+	+	+	+	PA
E20	+	+	+	+	+	+	+	+	PA
E22	+	+	+	+	+	+	+	+	PA

Laboratory F

Aerobic mesophilic flora: 2,6.10⁸/g

N°Sample	Reference method: ISO 11290-1					Alternative method: LESS Plus Broth Listeria spp			Agreement
	Half Fraser		Fraser		Final result	O&A	Palcam	Final result	
	O&A	Palcam	O&A	Palcam					
F4	-	-	-	-	-	-	-	-	NA
F7	-	-	-	-	-	-	-	-	NA
F9	-	-	-	-	-	-	-	-	NA
F10	-	-	-	-	-	-	-	-	NA
F13	-	-	-	-	-	-	-	-	NA
F18	-	-	-	-	-	-	-	-	NA
F23	-	-	-	-	-	-	-	-	NA
F24	-	-	-	-	-	-	-	-	NA
F2	+	+	+	+	+	+	+	+	PA
F3	+	+	+	+	+	+	+	+	PA
F8	+	+	+	+	+	+	+	+	PA
F12	+	+	+	+	+	+	+	+	PA
F15	+	+	+	+	+	-	-	-	ND
F17	+	+	+	+	+	+	+	+	PA
F19	+	+	+	+	+	+	+	+	PA
F21	-	-	-	-	-	+	+	+	PD
F1	+	+	+	+	+	+	+	+	PA
F5	+	+	+	+	+	+	+	+	PA
F6	+	+	+	+	+	+	+	+	PA
F11	+	+	+	+	+	+	+	+	PA
F14	+	+	+	+	+	+	+	+	PA
F16	+	+	+	+	+	+	+	+	PA
F20	+	+	+	+	+	+	+	+	PA
F22	+	+	+	+	+	+	+	+	PA

Laboratory G

Aerobic mesophilic flora: 4,6.10^{8}/g

N°Sample	Reference method: ISO 11290-1					Alternative method: LESS Plus Broth Listeria spp			Agreement
	Half Fraser		Fraser		Final result	O&A	Palcam	Final result	
	O&A	Palcam	O&A	Palcam					
G4	-	-	-	-	-	-	-	-	NA
G7	-	-	-	-	-	-	-	-	NA
G9	-	-	-	-	-	-	-	-	NA
G10	-	-	-	-	-	-	-	-	NA
G13	-	-	-	-	-	-	-	-	NA
G18	-	-	-	-	-	-	-	-	NA
G23	-	-	-	-	-	-	-	-	NA
G24	-	-	-	-	-	-	-	-	NA
G2	+	+	+	+	+	+	+	+	PA
G3	-	-	+	+	+	+	+	+	PA
G8	+	+	+	+	+	+	+	+	PA
G12	+	+	+	+	+	+	+	+	PA
G15	+	+	+	+	+	+	+	+	PA
G17	+	+	+	+	+	+	+	+	PA
G19	+	+	+	+	+	+	+	+	PA
G21	+	+	+	+	+	+	+	+	PA
G1	+	+	+	+	+	+	+	+	PA
G5	+	+	+	+	+	+	+	+	PA
G6	+	+	+	+	+	+	+	+	PA
G11	+	+	+	+	+	+	+	+	PA
G14	+	+	+	+	+	+	+	+	PA
G16	+	+	+	+	+	+	+	+	PA
G20	+	+	+	+	+	+	+	+	PA
G22	+	+	+	+	+	+	+	+	PA

Laboratory H

Aerobic mesophilic flora: $2,7.10^6$/g

N°Sample	Reference method: ISO 11290-1					Alternative method: LESS Plus Broth Listeria spp			Agreement
	Half Fraser		Fraser		Final result	O&A	Palcam	Final result	
	O&A	Palcam	O&A	Palcam					
H4	-	-	-	-	-	-	-	-	NA
H7	-	-	-	-	-	-	-	-	NA
H9	-	-	-	-	-	-	-	-	NA
H10	-	-	-	-	-	-	-	-	NA
H13	-	-	-	-	-	-	-	-	NA
H18	-	-	-	-	-	-	-	-	NA
H23	-	-	-	-	-	-	-	-	NA
H24	-	-	-	-	-	-	-	-	NA
H2	+	+	+	+	+	+	+	+	PA
H3	+	+	+	+	+	+	+	+	PA
H8	+	+	+	+	+	+	+	+	PA
H12	+	+	+	+	+	+	+	+	PA
H15	+	+	+	+	+	+	+	+	PA
H17	-	-	-	-	-	+	+	+	PD
H19	+	+	+	+	+	+	+	+	PA
H21	+	+	+	+	+	+	+	+	PA
H1	+	+	+	+	+	+	+	+	PA
H5	+	+	+	+	+	+	+	+	PA
H6	+	+	+	+	+	+	+	+	PA
H11	+	+	+	+	+	+	+	+	PA
H14	+	+	+	+	+	+	+	+	PA
H16	+	+	+	+	+	+	+	+	PA
H20	+	+	+	+	+	+	+	+	PA
H22	+	+	+	+	+	+	+	+	PA

Laboratory I

Aerobic mesophilic flora: 1,1.10^{8}/g

N°Sample	Reference method: ISO 11290-1					Alternative method: LESS Plus Broth Listeria spp			Agreement
	Half Fraser		Fraser		Final result	O&A	Palcam	Final result	
	O&A	Palcam	O&A	Palcam					
I4	-	-	-	-	-	-	-	-	NA
I7	-	-	-	-	-	-	-	-	NA
I9	-	-	-	-	-	-	-	-	NA
I10	-	-	-	-	-	-	-	-	NA
I13	-	-	-	-	-	-	-	-	NA
I18	-	-	-	-	-	-	-	-	NA
I23	-	-	-	-	-	-	-	-	NA
I24	-	-	-	-	-	-	-	-	NA
I2	+	+	+	+	+	+	+	+	PA
I3	+	+	+	+	+	+	+	+	PA
I8	+	+	+	+	+	+	-	+	PA
I12	+	+	+	+	+	+	+	+	PA
I15	-	-	-	-	-	+	+	+	PD
I17	-	-	+	+	+	+	+	+	PA
I19	+	+	+	+	+	-	-	-	ND
I21	-	-	+	+	+	-	-	-	ND
I1	+	+	+	+	+	+	+	+	PA
I5	+	+	+	+	+	+	+	+	PA
I6	+	+	+	+	+	+	+	+	PA
I11	+	+	+	+	+	+	+	+	PA
I14	+	+	+	+	+	+	+	+	PA
I16	+	+	+	+	+	+	+	+	PA
I20	+	+	+	+	+	+	+	+	PA
I22	+	+	+	+	+	+	+	+	PA

Laboratory J

Aerobic mesophilic flora: 2,5.10^{8}/g

N°Sample	Reference method: ISO 11290-1					Alternative method: LESS Plus Broth Listeria spp			Agreement
	Half Fraser		Fraser		Final result	O&A	Palcam	Final result	
	O&A	Palcam	O&A	Palcam					
J4	-	-	-	-	-	-	-	-	NA
J7	-	-	-	-	-	-	-	-	NA
J9	-	-	-	-	-	-	-	-	NA
J10	-	-	-	-	-	-	-	-	NA
J13	-	-	-	-	-	-	-	-	NA
J18	-	-	-	-	-	-	-	-	NA
J23	-	-	-	-	-	-	-	-	NA
J24	-	-	-	-	-	-	-	-	NA
J2	+	+	+	+	+	+	+	+	PA
J3	+	+	+	+	+	+	+	+	PA
J8	+	+	+	+	+	+	+	+	PA
J12	-	-	-	-	-	+	+	+	PD
J15	-	-	-	-	-	+	+	+	PD
J17	-	-	-	-	-	-	-	-	NA
J19	+	+	+	+	+	+	+	+	PA
J21	-	-	-	-	-	+	+	+	PD
J1	+	+	+	+	+	+	+	+	PA
J5	+	+	+	+	+	+	+	+	PA
J6	+	+	+	+	+	+	+	+	PA
J11	+	+	+	+	+	+	+	+	PA
J14	+	+	+	+	+	+	+	+	PA
J16	+	+	+	+	+	+	+	+	PA
J20	+	+	+	+	+	+	+	+	PA
J22	+	+	+	+	+	+	+	+	PA

Laboratory K

Aerobic mesophilic flora:8,5.10^7 /g

N°Sample	Reference method: ISO 11290-1					Alternative method: LESS Plus Broth Listeria spp			Agreement
	Half Fraser		Fraser		Final result	O&A	Palcam	Final result	
	O&A	Palcam	O&A	Palcam					
K4	-	-	-	-	-	+	+	+	PD
K7	-	-	-	-	-	-	-	-	NA
K9	-	-	-	-	-	-	-	-	NA
K10	-	-	-	-	-	-	-	-	NA
K13	-	-	-	-	-	-	-	-	NA
K18	-	-	-	-	-	-	-	-	NA
K23	-	-	-	-	-	-	-	-	NA
K24	-	-	-	-	-	-	-	-	NA
K2	+	+	+	+	+	+	+	+	PA
K3	+	+	+	+	+	+	+	+	PA
K8	+	+	+	+	+	+	+	+	PA
K12	+	+	+	+	+	+	+	+	PA
K15	+	+	+	+	+	+	+	+	PA
K17	+	+	+	+	+	+	+	+	PA
K19	-	-	-	-	-	+	+	+	PD
K21	-	-	-	-	-	+	+	+	PD
K1	+	+	+	+	+	+	+	+	PA
K5	+	+	+	+	+	+	+	+	PA
K6	+	+	+	+	+	+	+	+	PA
K11	+	+	+	+	+	+	+	+	PA
K14	+	+	+	+	+	+	+	+	PA
K16	+	+	+	+	+	+	+	+	PA
K20	+	+	+	+	+	+	+	+	PA
K22	+	+	+	+	+	+	+	+	PA

Laboratory L

Aerobic mesophilic flora: $9,7.10^7$ /g

N°Sample	Reference method: ISO 11290-1					Alternative method: LESS Plus Broth Listeria spp			Agreement
	Half Fraser		Fraser		Final result	O&A	Palcam	Final result	
	O&A	Palcam	O&A	Palcam					
L4	-	-	-	-	-	-	-	-	NA
L7	-	-	-	-	-	-	-	-	NA
L9	-	-	-	-	-	-	-	-	NA
L10	-	-	-	-	-	-	-	-	NA
L13	-	-	-	-	-	-	-	-	NA
L18	-	-	-	-	-	-	-	-	NA
L23	-	-	-	-	-	-	-	-	NA
L24	-	-	-	-	-	-	-	-	NA
L2	+	-	+	+	+	+	+	+	PA
L3	+	+	+	+	+	-	-	-	ND
L8	+	-	+	+	+	+	+	+	PA
L12	+	+	+	+	+	+	+	+	PA
L15	-	+	+	+	+	+	+	+	PA
L17	+	+	+	+	+	+	+	+	PA
L19	+	+	+	+	+	-	-	-	ND
L21	+	+	+	+	+	+	+	+	PA
L1	+	+	+	+	+	+	+	+	PA
L5	-	+	+	+	+	+	+	+	PA
L6	+	+	+	+	+	+	+	+	PA
L11	+	+	+	+	+	+	+	+	PA
L14	+	+	+	+	+	+	+	+	PA
L16	+	+	+	+	+	+	+	+	PA
L20	+	+	+	+	+	+	+	+	PA
L22	+	+	+	+	+	+	+	+	PA

Laboratory M

Aerobic mesophilic flora: 1,3.10^{8}/g

N°Sample	Reference method: ISO 11290-1					Alternative method: LESS Plus Broth Listeria spp			Agreement
	Half Fraser		Fraser		Final result	O&A	Palcam	Final result	
	O&A	Palcam	O&A	Palcam					
M4	-	-	-	-	-	-	-	-	NA
M7	-	-	-	-	-	-	-	-	NA
M9	-	-	-	-	-	-	-	-	NA
M10	-	-	-	-	-	+	-	+	PD
M13	-	-	-	-	-	-	-	-	NA
M18	-	-	-	-	-	-	-	-	NA
M23	-	-	-	-	-	-	-	-	NA
M24	-	-	-	-	-	-	-	-	NA
M2	+	+	+	+	+	+	+	+	PA
M3	+	+	+	+	+	+	+	+	PA
M8	-	-	-	-	-	+	+	+	PD
M12	-	-	-	-	-	+	+	+	PD
M15	+	+	+	+	+	+	+	+	PA
M17	+	+	+	+	+	+	+	+	PA
M19	+	+	+	+	+	+	+	+	PA
M21	+	+	+	+	+	+	+	+	PA
M1	+	+	+	+	+	+	+	+	PA
M5	+	+	+	+	+	+	+	+	PA
M6	+	+	+	+	+	+	+	+	PA
M11	+	+	+	+	+	+	+	+	PA
M14	+	+	+	+	+	+	+	+	PA
M16	+	+	+	+	+	+	+	+	PA
M20	+	+	+	+	+	+	+	+	PA
M22	+	+	+	+	+	+	+	+	PA

Laboratory N

Aerobic mesophilic flora:2,5.10^8 /g

N°Sample	Reference method: ISO 11290-1					Alternative method: LESS Plus Broth Listeria spp			Agreement
	Half Fraser		Fraser		Final result	O&A	Palcam	Final result	
	O&A	Palcam	O&A	Palcam					
N4	-	-	-	-	-	-	-	-	NA
N7	-	-	-	-	-	-	-	-	NA
N9	-	-	-	-	-	-	-	-	NA
N10	-	-	-	-	-	-	-	-	NA
N13	-	-	-	-	-	-	-	-	NA
N18	-	-	-	-	-	-	-	-	NA
N23	-	-	-	-	-	-	-	-	NA
N24	-	-	-	-	-	-	-	-	NA
N2	+	+	+	+	+	+	+	+	PA
N3	+	+	+	+	+	+	+	+	PA
N8	+	+	+	+	+	+	+	+	PA
N12	+	+	+	+	+	+	+	+	PA
N15	+	+	+	+	+	+	+	+	PA
N17	+	+	+	+	+	+	+	+	PA
N19	+	+	+	+	+	+	+	+	PA
N21	-	-	-	-	-	-	-	-	NA
N1	+	+	+	+	+	+	+	+	PA
N5	+	+	+	+	+	+	+	+	PA
N6	+	+	+	+	+	+	+	+	PA
N11	+	+	+	+	+	+	+	+	PA
N14	+	+	+	+	+	+	+	+	PA
N16	+	+	+	+	+	+	+	+	PA
N20	+	+	+	+	+	+	+	+	PA
N22	+	+	+	+	+	+	+	+	PA

Laboratory O

Aerobic mesophilic flora: 4,2.10^7/g

N°Sample	Reference method: ISO 11290-1					Alternative method: LESS Plus Broth Listeria spp			Agreement
	Half Fraser		Fraser		Final result	O&A	Palcam	Final result	
	O&A	Palcam	O&A	Palcam					
O4	-	-	-	-	-	-	-	-	NA
O7	-	-	-	-	-	-	-	-	NA
O9	-	-	-	-	-	-	-	-	NA
O10	-	-	-	-	-	-	-	-	NA
O13	-	-	-	-	-	-	-	-	NA
O18	-	-	-	-	-	-	-	-	NA
O23	-	-	-	-	-	-	-	-	NA
O24	-	-	-	-	-	-	-	-	NA
O2	-	-	+	+	+	+	+	+	PA
O3	+	+	+	+	+	+	+	+	PA
O8	+	+	+	+	+	+	+	+	PA
O12	+	+	+	+	+	+	+	+	PA
O15	-	-	+	+	+	+	+	+	PA
O17	+	+	+	+	+	+	+	+	PA
O19	+	-	+	+	+	-	-	-	ND
O21	-	-	-	-	-	+	+	+	PD
O1	+	+	+	+	+	+	+	+	PA
O5	+	+	+	+	+	+	+	+	PA
O6	+	+	+	+	+	+	+	+	PA
O11	+	+	+	+	+	+	+	+	PA
O14	+	+	+	+	+	+	+	+	PA
O16	+	+	+	+	+	+	+	+	PA
O20	+	+	+	+	+	+	+	+	PA
O22	+	+	+	+	+	+	+	+	PA

Laboratory P (ADRIA)

Aerobic mesophilic flora: 2,1.10^8/g

N°Sample	Reference method: ISO 11290-1♦					Alternative method: LESS Plus Broth Listeria spp			Agreement
	Half Fraser		Fraser		Final result	O&A	Palcam	Final result	
	O&A	Palcam	O&A	Palcam					
P4	-	-	-	-	-	-	-	-	NA
P7	-	-	-	-	-	-	-	-	NA
P9	-	-	-	-	-	-	-	-	NA
P10	-	-	-	-	-	-	-	-	NA
P13	-	-	-	-	-	-	-	-	NA
P18	-	-	-	-	-	-	-	-	NA
P23	-	-	-	-	-	-	-	-	NA
P24	-	-	-	-	-	-	-	-	NA
P2	+	+	+	+	+	+	+	+	PA
P3	+	+	+	+	+	+	+	+	PA
P8	+	+	+	+	+	+	+	+	PA
P12	-	-	-	-	-	+	+	+	PD
P15	+	+	+	+	+	+	+	+	PA
P17	+	+	+	+	+	+	+	+	PA
P19	+	+	+	+	+	+	+	+	PA
P21	+	+	+	+	+	+	+	+	PA
P1	+	+	+	+	+	+	+	+	PA
P5	+	+	+	+	+	+	+	+	PA
P6	+	+	+	+	+	+	+	+	PA
P11	+	+	+	+	+	+	+	+	PA
P14	+	+	+	+	+	+	+	+	PA
P16	+	+	+	+	+	+	+	+	PA
P20	+	+	+	+	+	+	+	+	PA
P22	+	+	+	+	+	+	+	+	PA