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NF VALIDATION
Validation of alternative analytical methods
Application in food microbiology

Summary report

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

CHROMID® Coli (COLI ID-F)

(Certificate number: BIO 12/20 - 12/06)

for the enumeration of coliforms in a broad range of foods

Quantitative method

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This report consists of 55 pages, including 8 appendices.
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Competencies of the laboratory are certified by COFRAC accreditation for the analyses marked with the symbol◆.

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

Measurement uncertainty on the reference method results is not taken into account to provide the conclusion in this report; this measurement uncertainty is however available.

The technical protocol and the result interpretation were realised according to the EN ISO 16140-2:2016 and the AFNOR technical rules (PR Revision 7).

Validation protocols	▪ ISO 16140-1 (2016): Microbiology of the food chain - Method validation — *Part 1: Vocabulary* ▪ ISO 16140-2 (2016): Microbiology of the food chain - Method validation — *Part 2: Protocol for the validation of alternative (proprietary) methods against a reference method* ▪ AFNOR technical rules (PR Revision 7).
Reference method♦	ISO 4832 (2006): Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coliforms — Colony-count technique
Alternative method	**CHROMID® Coli (COLI ID-F) for the enumeration of coliforms**
Scope	**Broad range of foods**
Certification organization	AFNOR Certification (http://nf-validation.afnor.org/)

♦ Analyses performed according to the COFRAC accreditation

1 INTRODUCTION

The **CHROMID® Coli (COLI ID-F) for the enumeration of coliforms** was validated in 2006 according to the EN ISO 16140:2003 protocol and the AFNOR technical rules (Certificate number: BIO 12/20 - 12/06).

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

Table 1 - Steps of the AFNOR Certification validation

Date	Study
14/12/2006	Initial Validation for a broad range of food according to ISO 16140 (2003)
2010	Renewal study
27/11/2014	Renewal study
December 2018	Renewal study according to the EN ISO 16140-2:2016.
October 2022	Renewal study

2 METHODS DESCRIPTION

2.1 Alternative method

2.1.1 Principle

The CHROMID® Coli (Coli ID) is a chromogenic medium which allows the enumeration of coliforms and *Escherichia coli*. This medium contains 2 chromogenic substrates. The coliforms (different from *Escherichia coli*) appear as blue to grey colonies. The *Escherichia coli* appear as pink to violet due to the presence of *β-glucuronidase.* Both aspects of colonies need to be considered for coliforms enumeration.

2.1.2 Protocol

The protocol is described in **Appendix 1**.

2.1.3 Restrictions

There is no restriction for use.

2.2 Reference method◆

The reference method is the NF ISO 4832 (2006): Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of coliforms - Colony-count technique. The flow diagram is provided in **Appendix 2**.

2.3 Protocol applied during the initial validation and the renewal study

The plates were incubated for 22 h at 37°C ± 1°C.

3 INITIAL VALIDATION, EXTENSION/RENEWAL STUDIES: RESULTS

3.1 Method comparison study

The method comparison study is a study performed by the expert laboratory to compare the alternative method with the reference method.

The study was carried out on a diversity of samples and strains representative of agri-food products. This does not constitute an exhaustive list of the different matrices included in the scope.
For any comment on the alternative method, please contact AFNOR Certification at http://nf-validation.afnor.org/contact-2/.

3.1.1 Relative trueness

The relative trueness is the degree of correspondence between the response obtained by the reference method and the response obtained by the alternative method on identical samples.

3.1.1.1 Number and nature of the samples

Five food categories were tested with a minimum of 15 interpretable results per category and 5 interpretable results per type.
96 samples were tested for the initial validation study, 51 for a study run for bioMérieux in 2011 and 30 samples for the last renewal study (2018).

The repartition per tested category and type is provided in **Table 2**. Combining all the studies 177 samples were tested, leading to 135 exploitable results.

◆ Analysis performed according to the COFRAC accreditation

Table 2 – Repartition per tested category and type

Category		Type		Number of samples tested				Number of samples with interpretable results by both methods			
				2006	2011	2018	Total	2006	2011	2018	Total
1	Meat and meat products	a	Raw (unseasoned)	6	11	0	17	5	10	0	15
		b	Raw and cooked delicatessen	9	15	0	24	6	14	0	19
		c	RTE, RTRH	3	6	0	9	1	6	0	7
			Total	18	32	0	50	12	30	0	41
2	Milk and dairy products	a	Raw milk	4	0	3	7	3	0	3	6
		b	Cream, desserts and cheeses	10	0	4	14	4	0	2	6
		c	Milk powder	3	0	5	8	3	0	2	5
			Total	17	0	12	29	10	0	7	17
3	Seafood products	a	Raw fish	6	0	9	15	4	0	5	9
		b	Smoked and marinated	4	1	0	5	4	1	0	5
		c	RTE, RTRH	16	2	3	21	16	2	1	19
			Total	26	3	12	41	24	3	6	33
4	Vegetables	a	Raw vegetables	10	0	0	10	5	0	0	5
		b	Frozen	5	3	0	8	2	3	0	5
		c	RTE, RTRH	6	10	0	16	5	9	0	14
			Total	21	13	0	34	12	12	0	24
5	Eggs and egg-based products	a	Eggs	6	0	0	6	6	0	0	6
		b	Egg-based products	4	0	3	7	3	0	2	5
		c	Pastries	4	3	3	10	4	3	2	9
			Total	14	3	6	23	13	3	4	20
All categories				**96**	**51**	**30**	**177**	**71**	**48**	**17**	**135**

3.1.1.2 Artificial and natural contamination of the samples

50 samples were artificially contaminated using seeding protocols. The inoculated strains and the injury protocols applied are provided in **Appendix 3**.
43 samples gave interpretable results by both methods.
93 samples giving interpretable results by both methods were naturally contaminated.

68.4 % of the samples were naturally contaminated.

3.1.1.3 Raw data

The raw data are provided in **Appendix 4**.

The samples were analyzed by the reference and the alternative methods in order to have 15 interpretable results per category, and 5 interpretable results per tested type.

The data are classified in three categories (See **Table 3**):

- Interpretable results with the reference and the alternative methods;
- Results with less than 4 colonies per plate with the reference and/or the alternative method (indicated with "*" in the data) in order to have a more precise result. These results were not included in the calculation.
- Results below or above the quantification limit: according to the ISO 16140-2:2016, if any result (either reference or alternative method) is below the quantification limit, the data should be plotted using a substituted value of 1 $\log_{10}$ unit less than the observed value. Similarly, any value greater than the upper limit should be amended by adding $\log_{10}$ unit more. These results are not included in the calculations but also appear on the graphs.

Table 3 - Classification of the data

Category		Type		Number of samples tested	Number of interpretable results by both methods	Number of samples with <4 CFU/plate	Number of samples with results below or above the quantification limit
1	**Meat and meat products**	a	Raw (unseasoned)	17	15	2	2
		b	Raw and cooked delicatessen	24	19	2	1
		c	RTE, RTRH	9	7	1	0
			Total	50	41	5	3
2	**Milk and dairy products**	a	Raw milk	7	6	0	1
		b	Cream, desserts and cheeses	14	6	1	7
		c	Milk powder	8	5	1	2
			Total	29	17	2	10
3	**Seafood products**	a	Raw fish	15	9	1	5
		b	Smoked and marinated	5	5	0	0
		c	RTE, RTRH	21	19	0	2
			Total	41	33	1	7
4	**Vegetables**	a	Raw vegetables	10	5	0	5
		b	Frozen	8	5	1	2
		c	RTE, RTRH	16	14	1	1
			Total	34	24	2	8
5	**Eggs and egg-based products**	a	Eggs	6	6	0	0
		b	Egg-based products	7	5	1	1
		c	Pastries	10	9	0	1
			Total	23	20	1	2
All categories				**177**	**135**	**11**	**30**

The samples, which were not used in the calculations, are provided in **Table 4**.

Table 4 - Samples which were not used in the calculations

Sample N°	Product	ISO 4832♦ (log CFU/g)	CHROMID® (COLI ID-F) for the enumeration of coliforms	Category	Type
594	Raw pork meat	1,65	<1,00	1	a
1867	Columbo turkey skewer	>4,18	>4,18	1	a
563	Ready to cook veal meal	1,30*	1,00*	1	b
564	Ready to cook veal meal	1,00*	1,00*	1	b
592	Sausage meat	2,11	1,48*	1	b
1865	Frozen sausages	2,18	<1,00	1	b
589	Tartar	1,81	1,48*	1	c
642	Ready to heat meal	2,98	ND	1	c
842	Raw milk	>5,18	3,92	2	a
847	Goat cheese	>6,18	>6,18	2	b
848	Goat cheese	>5,18	>5,18	2	b
1146	Cheese (Raclette)	2,11	<2,00	2	b
1273	Strawberries ice cream	<1,00	1,30*	2	b
1274	Pear ice cream	<1,00	<1,00	2	b
1145	Cheese	2,00	<2,00	2	b
6283	Raw milk cheese (Roquefort)	<1,00	<1,00	2	b
6284	Raw milk cheese (Selles sur Cher)	>5,18	>5,18	2	b
6297	Skimmed milk powder	<1,00	<1,00	2	c
6298	Skimmed milk powder	1,48*	1,30*	2	c
6299	Milk powder	1,30*	<1,00	2	c
1652	Pilchards	1,18*	<1,00	3	a
1653	Mackerel	<1,00	0,70*	3	a
6402	Lobster	<1,00	<1,00	3	a
6723	Fish fillet	>4,18	>4,18	3	a
6724	Fish fillet	>5,18	4,23	3	a
6280	Ready to reheat salmon	<1,00	<1,00	3	c
627	Brussels sprouts	1,70	<1,00	4	a
629	Green beans	1,40*	<1,00	4	a
630	Courgette	<1,00	<1,00	4	a
1275	Green beans	4,36	>5,18	4	a
1277	Green pepper	4,67	>5,18	4	a
631	Frozen vegetables mix	<1,00	<1,00	4	b
1276	Frozen vegetables mix	>5,18	>5,18	4	b
1348	Sliced courgette	2,70	2,00*	4	b
1279	Deli salad (leeks)	>5,18	>5,18	4	c
2123	**Oriental tabouleh**	2,18	1,00*	4	c
1137	Liquid egg product	4,18	4,18	5	a
1144	Egg based dessert	2,18	2,00*	5	b
6281	Pastry	1,85	<1,00	5	c

*: Results with less than 4 colonies per plate with the reference and/or the alternative method

♦ Analyses performed according to the COFRAC accreditation

3.1.1.4 Statistical interpretation

The calculations are provided in **Appendix 5**.

The obtained data were analyzed using the scatter plot. The graphs are provided with the line of identity (y = x).
The **Figures 1 to 5** show the data plotted for each individual category.
The **Figure 6** shows the data plotted for all the products.

Figure 1 - Data plotted for the Meat and meat products

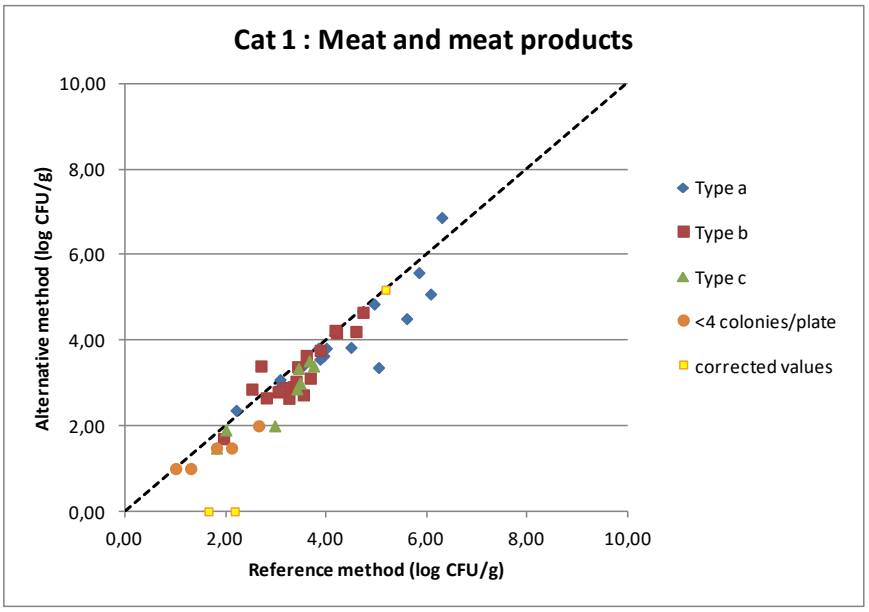


Figure 2 - Data plotted for Milk and dairy products

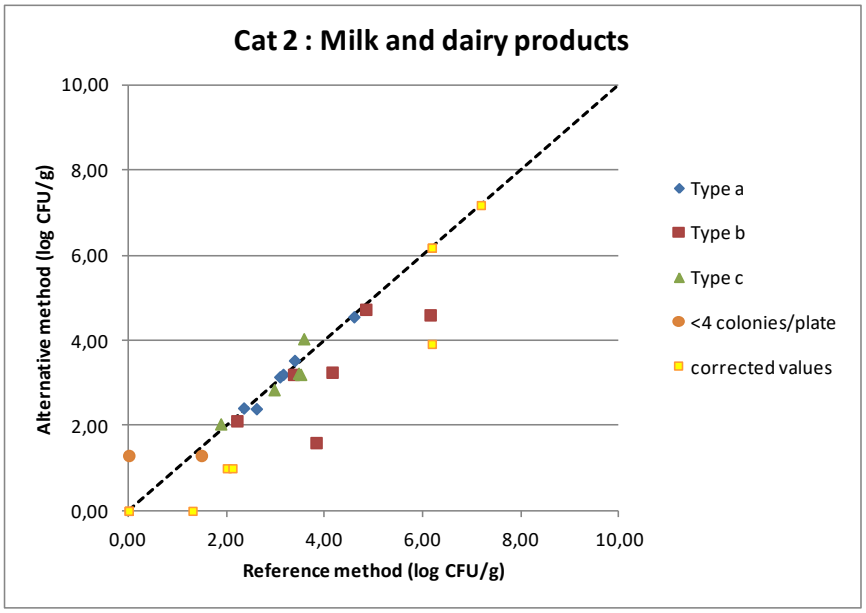


Figure 3 - Data plotted for **Seafood products**

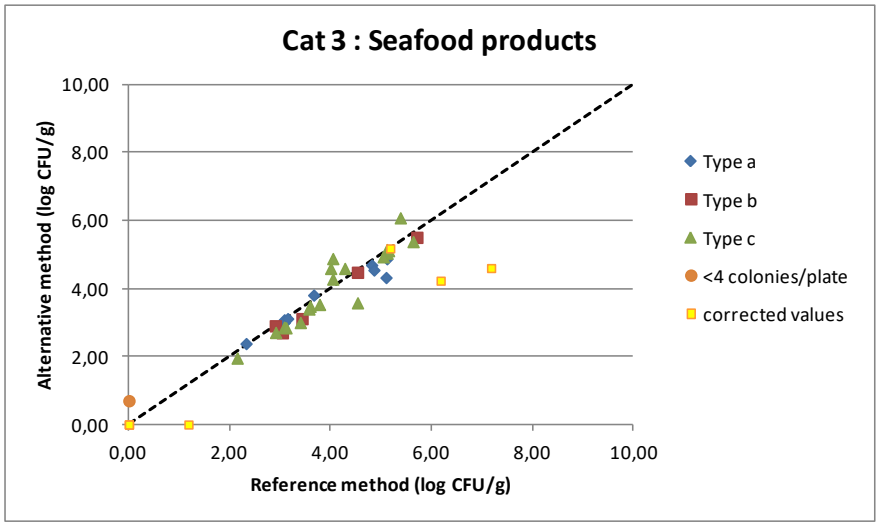


Figure 4 - Data plotted for **Vegetables**

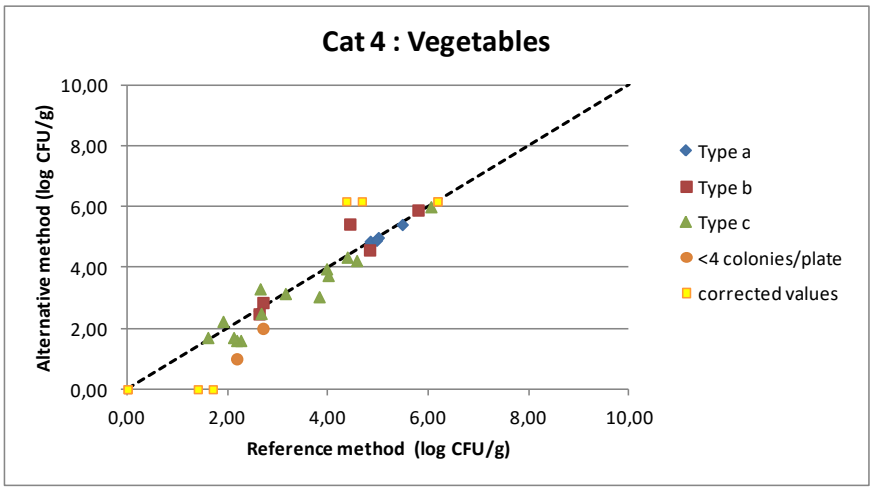


Figure 5 - Data plotted for **Eggs and egg-based products**

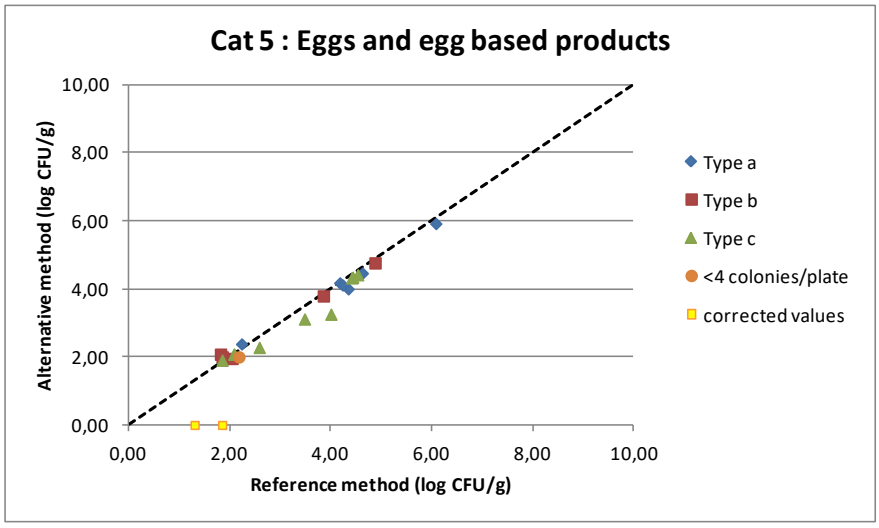
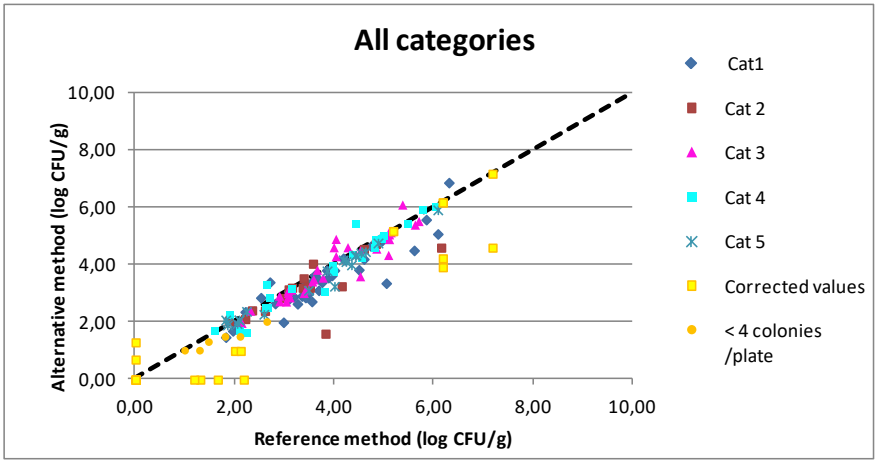


Figure 6 - Data plotted for all the products



The calculated values for Average difference and Standard deviation differences per category are provided in **Table 5**.

Table 5 - Calculated values

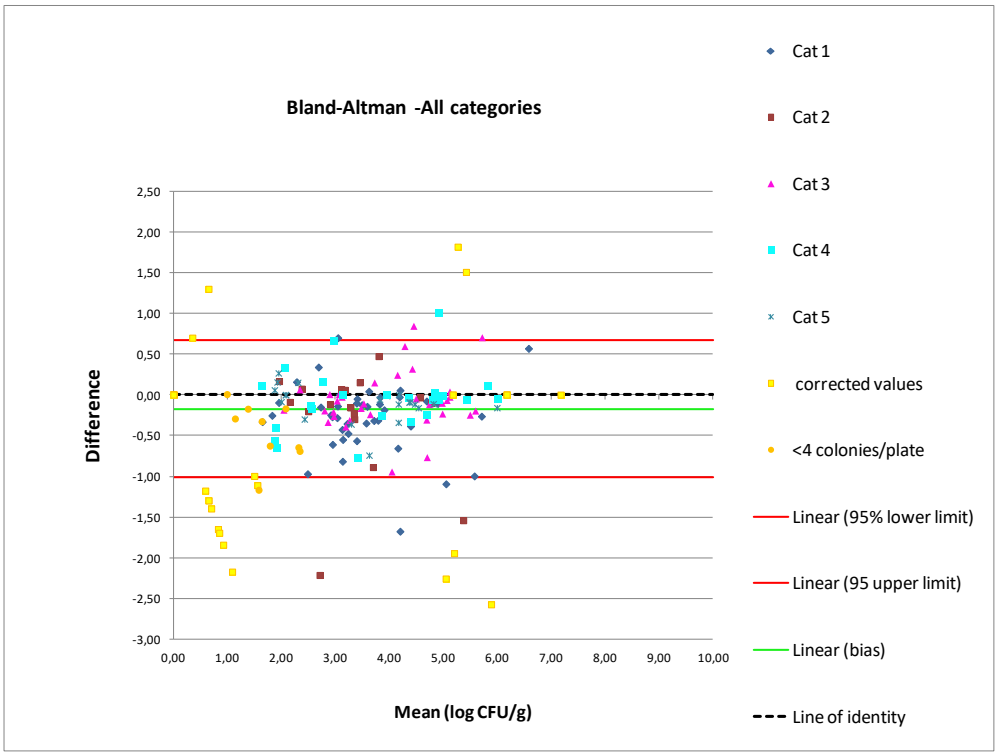
Category		Number of samples with interpretable results	$\bar{D}$	SD	Lower limit (95%)	Upper limit (95%)
1	Meat and meat products	41	-0.28	0.43	-1.16	0.60
2	Milk and dairy products	17	-0.29	0.67	-1.75	1.18
3	Seafood products	33	-0.08	0.35	-0.81	0.64
4	Vegetables	24	-0.06	0.38	-0.87	0.74
5	Eggs and egg-based products	20	-0.11	0.22	-0.58	0.36
All categories		**135**	**-0.17**	**0.42**	**-1.01**	**0.67**

$\bar{D}$: Average difference SD: Standard deviation of differences

The average differences vary from - 0.29 log (dairy products) to - 0.06 log (vegetables).
The bias between both methods for all categories combined is -0.17 log CFU.

The Bland-Altman difference plot combining all the samples is given **Figure 7**.

Figure 7 – Bland-Altman difference plot for all the samples



Samples for which the difference between the result observed with the reference and the alternative methods is higher or lower than the limits are listed in **Table 6**.

Table 6 - Analysis of the data out of the confidence limits

Classification of the data	CHROMID® (COLI ID-F) for the enumeration of coliforms									
	Category	Type	Sample N°	Product	Reference method	Alternative method	Values before correction (reference and/or alternative)	Mean	Difference	CLs
Interpretable results	1	a	1913	Ground turkey meat	5.04	3.36	/	4.20	-1.68	-1,01 / 0,67
	1	a	1917	Chicken mechanically deboned meat	5.60	4.51	/	5.05	-1.10	
	2	b	6419	Raw milk cheese	6.15	4.60	/	5.37	-1.54	
	2	b	6420	Dairy dessert	3.82	1.60	/	2.71	-2.22	
	1	b	635	Sausage	2.70	3.40	/	3.05	0.70	
	4	c	1280	Deli salad	5.38	6.08	/	5.73	0.70	
	5	c	1281	Salmon cubes	4.04	4.88	/	4.46	0.84	
	4	b	**2367**	**Frozen tomato and pepper pie**	4.43	5.43	/	4.93	1.00	
<4 CFU/plate	4	c	**2123**	**Oriental tabouleh**	2.18	1.00	/	1.59	-1.18	
< or >	1	a	594	Raw pork meat	1.65	0.00	1.00	0.83	-1.65	
	1	b	1865	Frozen sausages	2.18	0.00	1.00	1.09	-2.18	
	2	a	842	Raw milk	6.18	3.92	5.18	5.05	-2.26	
	2	b	1145	Cheese	2.00	1.00	2.00	1.50	-1.00	
	2	b	1146	Cheese (Raclette)	2.11	1.00	2.00	1.56	-1.11	
	2	c	**6299**	Milk powder	1.30	0.00	1.00	0.65	-1.30	
	3	a	1652	Pilchards	1.18	0.00	1.00	0.59	-1.18	
	3	a	**6724**	Fish fillet	6.18	4.23	5.18	5.21	-1.95	
	3	a	**6725**	Fish	7.18	4.60	6.18	5.89	-2.58	
	4	a	627	Brussels sprouts	1.70	0.00	1.00	0.85	-1.70	
	4	a	629	Green beans	1.40	0.00	1.00	0.70	-1.40	
	4	b	6278	Quiche lorraine	1.30	0.00	1.00	0.65	-1.30	
	5	c	6281	Pastry	1.85	0.00	1.00	0.92	-1.85	
	2	b	1273	Strawberries ice cream	0.00	1.30	1.00	0.65	1.30	
	3	a	1653	Mackerel	0.00	0.70	1.00	0.35	0.70	
	4	a	1275	Green beans	4.36	6.18	5.18	5.27	1.82	
	4	a	1277	Green pepper	4.67	6.18	5.18	5.43	1.51	

Values in green: differences in favour of the alternative method Values in red: differences in favour of the reference method Values in black: equivalent enumeration observed for the two methods

Corrected value

Results calculated using plates with less than 4 colonies

The values outside of the confidence limits at 95 % concern:

- 8 samples with interpretable results by both method (4 samples below the LCL and 4 samples above the UCL)
- 1 sample with less than 4 colonies on the plate (CHROMID Coli);
- 17 samples below or above the quantification limits (5 for the reference method, 12 for the alternative method).

3.1.1.5 Discordant results

The number of samples below or above the CLs is given **Table 7**).

Table 7 – Number of samples outside the CLs

		Number of samples
Interpretable results by both methods	< LCL	4
	> UCL	4
	Total	8
<4 CFU/plate	< LCL	1
	> UCL	0
	Total	1
< or > the quantification limit	< LCL	13
	> UCL	4
	Total	17
Total < LCL		**18**
Total >UCL		**8**
TOTAL		**26**

For samples giving interpretable results by both methods, the number of samples with higher enumeration with the reference method is the same than the number of samples with higher enumeration using the alternative method (4 samples)
For the samples giving results below or above the quantification limit, more samples are below the LCL (13 vs 4) but note that for a majority of these samples, the difference is linked to the fact that a substituted value was used for the calculation.
For 11 samples outside of the confidence interval limits, the results can be considered equivalent.
The bias between the tested methods is low (-0.17log CFU).

3.1.1.6 Conclusion

The relative trueness of the alternative method is satisfying. The alternative method is equivalent to the reference method.

3.1.2 Accuracy profile study

The accuracy profile is a graphical representation of the capacity of measurement of the quantitative method, obtained by combining acceptability intervals and β-expectation tolerance intervals, both reported to different levels of the reference value.

3.1.2.1 Matrices

Five matrices were tested. A minimum of one type per category, and 2 different batches, was selected, using 6 samples per type. 2 samples were contaminated at a low level, 2 at intermediate level, 2 at a high level. For each sample, 5 replicates (5 different test portions) were tested. The tested categories, types, matrix and inoculated strains are provided in **Table 8**.

Table 8 - Categories, types and matrices

Category		Type	Matrix	Inoculated strain	Origin	Inoculation level (CFU/g)
1	**Meat products and meat**	a Raw meat	Ground beef	*Klebsiella oxytoca* 42	Food product	300 50000 100000
2	**Milk and dairy products**	b Dessert	Vanilla dairy-based dessert	*Enterobacter agglomerans* 74	Cheese	
3	**Seafood products**	a Raw fish	Raw fish fillet	*Enterobacter cloacae* Ad230	Tuna	
4	**Vegetables**	c RTE, RTRH	Grated carrots	*Escherichia coli* 19	Grated carrots	
5	**Eggs and egg based products**	a Eggs	Liquid egg product	*Cronobacter sakazakii* Ad890	Liquid egg product	

3.1.2.2 Calculation and interpretation

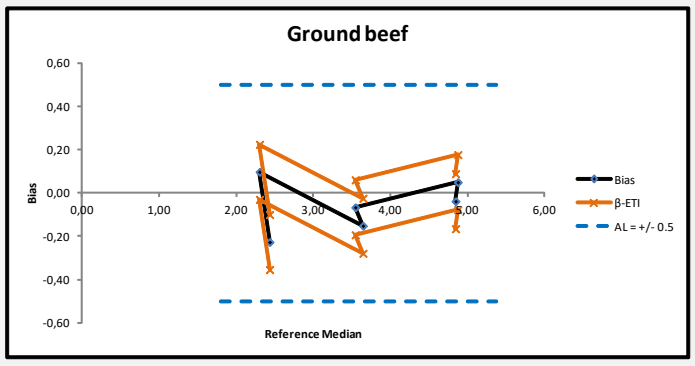
The raw data are provided in **Appendix 6**. The summary tables (in log CFU/g) and calculations are provided in **Appendix 7**. The statistical results and the accuracy profiles are provided **Figure 8**.

The calculations were done using the AP Calculation Tool MCS (Clause 6-1-3-3 calculation and interpretation of accuracy profile study) ver 31-07-2018 available on http://standards.iso.org/iso/16140

The accuracy profiles are comprised within the Acceptability Limits for all the tested matrices.

Figure 8 – Accuracy profile

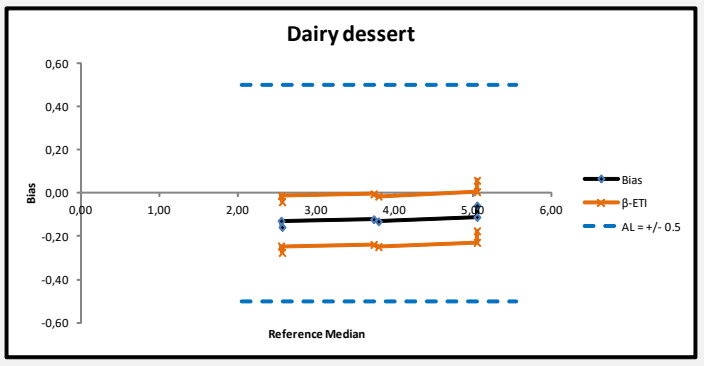
(Food) Category	Meat product
(Food) Type	Ground beef



Sample Name	Reference central value	Bias	Lower β-ETI	Upper β-ETI	β-ETI compared to AL=±0.5 Acceptable	β-ETI compared to final AL Acceptable
7468-7472	2,43	-0,227	-0,354	-0,100	YES	YES
7483-7487	2,30	0,097	-0,030	0,224	YES	YES
7473-7477	3,64	-0,152	-0,279	-0,025	YES	YES
7488-7492	3,54	-0,067	-0,194	0,060	YES	YES
7478-7482	4,88	0,049	-0,078	0,176	YES	YES
7493-7497	4,85	-0,039	-0,166	0,088	YES	YES

	Reference method	Alternative method	SD repeatability of reference method <= 0.125	Final AL
SD Repeatability	0,089	0,088	YES	+/- 0,500

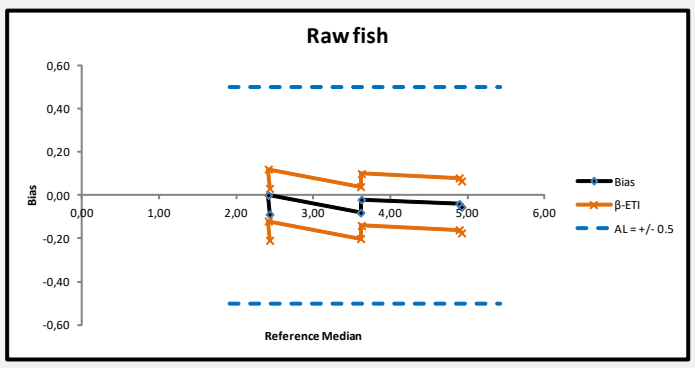
(Food) Category	Dairy
(Food) Type	Dairy dessert



Sample Name	Reference Central value	Bias	Lower β-ETI	Upper β-ETI	β-ETI compared to AL=±0.5 Acceptable	β-ETI compared to final AL Acceptable
6641-6645	2,56	-0,158	-0,275	-0,041	YES	YES
6656-6660	2,54	-0,129	-0,246	-0,012	YES	YES
6646-6650	3,72	-0,122	-0,239	-0,005	YES	YES
6661-6665	3,79	-0,132	-0,249	-0,015	YES	YES
6651-6655	5,04	-0,112	-0,229	0,005	YES	YES
6666-6670	5,04	-0,059	-0,176	0,058	YES	YES

	Reference method	Alternative method	SD repeatability of reference method <= 0.125	Final AL
SD Repeatability	0,096	0,081	YES	+/- 0,500

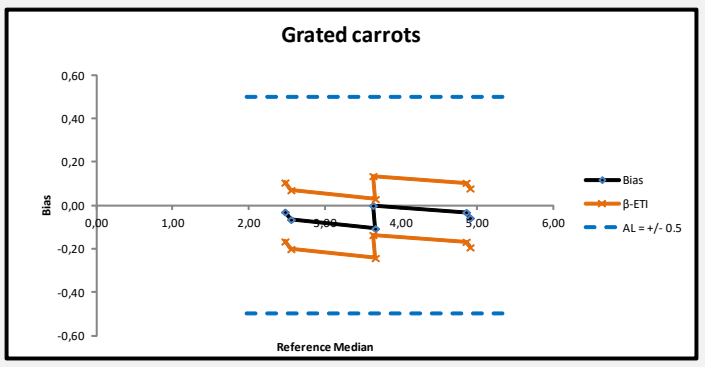
(Food) Category	Seafood
(Food) Type	Raw fish



Sample Name	Reference Central value	Bias	Lower β-ETI	Upper β-ETI	β-ETI compared to AL=±0.5 Acceptable	β-ETI compared to final AL Acceptable
6817-6821	2,43	-0,089	-0,209	0,031	YES	YES
6832-6836	2,41	0,000	-0,120	0,120	YES	YES
6822-6826	3,61	-0,081	-0,201	0,039	YES	YES
6837-6841	3,62	-0,021	-0,141	0,099	YES	YES
6827-6831	4,89	-0,041	-0,161	0,079	YES	YES
6842-6846	4,92	-0,055	-0,175	0,065	YES	YES

	Reference method	Alternative method	SD repeatability of reference method <= 0.125	Final AL
SD Repeatability	0,074	0,083	YES	+/- 0,500

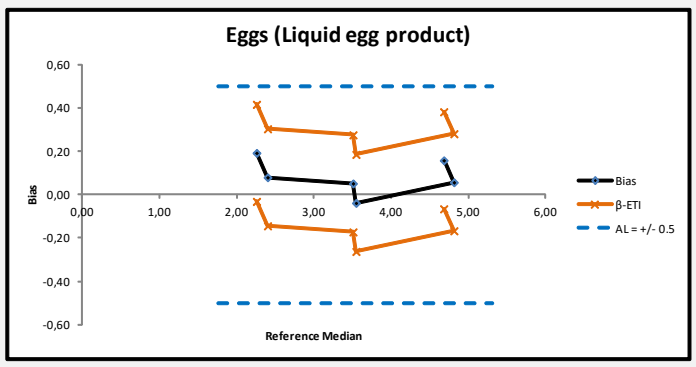
(Food) Category	Vegetables
(Food) Type	Grated carrots



Sample Name	Reference Central value	Bias	Lower β-ETI	Upper β-ETI	β-ETI compared to AL=±0.5 Acceptable	β-ETI compared to final AL Acceptable
6536-6640	2,48	-0,030	-0,166	0,106	YES	YES
6551-6555	2,56	-0,065	-0,201	0,071	YES	YES
6541-6545	3,66	-0,106	-0,242	0,029	YES	YES
6556-6560	3,63	0,000	-0,136	0,136	YES	YES
6546-6550	4,86	-0,031	-0,167	0,104	YES	YES
6561-6565	4,91	-0,057	-0,193	0,078	YES	YES

	Reference method	Alternative method	SD repeatability of reference method <= 0.125	Final AL
SD Repeatability	0,089	0,094	YES	+/- 0,500

(Food) Category	Eggs and Egg based products
(Food) Type	Eggs (Liquid egg product)



Sample Name	Reference Central value	Bias	Lower β-ETI	Upper β-ETI	β-ETI compared to AL=±0.5 Acceptable	β-ETI compared to final AL Acceptable
6017-6021	2,26	0,192	-0,032	0,416	YES	YES
6032-6036	2,40	0,079	-0,145	0,303	YES	YES
6022-6026	3,51	0,051	-0,173	0,275	YES	YES
6037-6041	3,54	-0,039	-0,263	0,185	YES	YES
6027-6031	4,81	0,056	-0,167	0,280	YES	YES
6042+6046	4,68	0,158	-0,066	0,381	YES	YES

	Reference method	Alternative method	SD repeatability of reference method <= 0.125	Final AL
SD Repeatability	0,152	0,155	NO	+/- 0,500

3.1.2.3 Conclusion

For the five matrices tested the observed profiles are comprised within the AL fixed at ± 0.5 log. All the accuracy profiles fulfil the performance criteria.

3.1.3 Inclusivity and exclusivity studies

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.

For the initial validation study (2006), 30 target and 20 non-target strains were tested in duplicate on PCA, VRBL and CHROMID Coli (37°C).
20 additional target strains and 10 non-target strains were tested in 2017, once on PCA, VRBL and CHROMID Coli (37°C).

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

Inclusivity

Among the 50 target strains tested 5 gave non-typical colonies using the CHROMID Coli:

- *Escherichia fergusonii* Ad 1381
- *Serratia liquefaciens* Ad2601
- *Serratia proteomaculans* Ad 1698
- *Serratia marcescens* Ad 2604
- *Serratia fonticola* Ad 1696

Exclusivity

30 non target strains were tested, 5 strains gave typical colonies on CHROMID Coli plates and VRBL plates

- *Kluyvera ascorbata* Ad 229
- *Leclercia adecarboxylata* Ad 707
- *Lelliottia amnigena* Ad 1379
- *Pantoea agglomerans* A00L065
- *Raoultella terrigena* Ad 1370

Two additional strains gave typical colonies only on VRBL plates:

- *Buttiauxella agrestis* Ad 1328
- *Yersinia enterocolitica* Ad 1028

The CHROMID Coli method is as specific and selective, as the reference method.

3.1.4 Practicability

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

Storage conditions, shelf-life and modalities of utilisation after first use	The bottles are stored in their boxes at 2°C -8°C until the expiry date and kept away from light The agar cannot be melted more than twice		
Time to result	Steps	**Reference method**	**Alternative method**
	Sampling analysis	D0	D0
	Enumeration	D1	D1
Common step with the reference method	Preparation of initial suspension		

The enumeration of coliforms is available in one day for both methods.

3.2 Inter-laboratory study organisation and results

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

The study was run in 2006.

Pasteurised half-skimmed milk inoculated with *Escherichia coli* 94 and *Enterobacter cloacae* Fb2 was used for the study.

14 laboratories participated in the study.

The results of the inter-laboratory study run in 2006 were interpreted according to the EN ISO 16140-2:2016 standard using the Excel spread sheet available at http://standards.iso.org/iso/16140 (AP Calculation tool ILS (clause 6.2.3 Calculation summary and interpretations of data) ver 14.03.2016).

3.2.1 Experimental parameters controls

3.2.1.1 Sample stability

- **Strain stability during transport**

Two samples inoculated per inoculation level were tested for enumeration after 24 h and 48 h storage at 3°C ± 2°C (See **Table 9**)

Table 9 – *Enterobacter cloacae* Fb2 and *Escherichia coli* 94 stability in the matrix

	Level 1		Level 2		Level 3	
	Replicate 1	Replicate 2	Replicate 1	Replicate 2	Replicate 1	Replicate 2
Day 0	71	87	720	760	8 100	8 000
Day 1	72	78	810	640	9 300	6 600
Day 2	63	55	880	770	7 500	6 600

No evolution was observed during storage for 48 h at 3°C ± 2°C.

3.2.2 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 10**.

Table 10 - Sample temperatures at receipt

Collaborator	Temperature measured at receipt (°C)	Date and hour receipt of the samples		Temperature measured by the probe (°C)
A	7.5	Day 2	14h00	0.5
B	2.0	Day 1	11h15	0.0
C	4.0	Day 1	11h30	*Probe not received*
D	3.0	Day 1	08h30	0.0
E	2.5	Day 2	09h10	0.0
F	0.3	Day 1	11h20	- 2.5[1]
G	4.6	Day 1	10h00	0.00
H	0.2	Day 1	08h15	0.00
I	0.4	Day 1	09h30	0.00
J	1.0	Day 1	11h30	- 1.00[1]
K	0.6	Day 1	09h20	0.00
L	0.3	Day 1	13h15	0.00
M	0.0	Day 1	11h00	0.00
N	0.3	Day 1	08h45	0.00

All the packages were declined at Day 1 except for two labs (A and E) which received their sample at Day 2. All the temperature measured at receipt were correct or below 8.4°C. No problem was encountered during transport.

3.2.3 Result analysis

3.2.3.1 Results obtained by the expert Lab.

The results obtained by the expert Lab. are the following (See **Table 11**).

Table 11 – Results obtained by the expert Lab.

Level (log CFU/g)	Reference method		Alternative method	
	Replicate 1	Replicate 2	Replicate 1	Replicate 2
< 1	< 1	< 1	< 1	< 1
1 to 2	1,97	1,92	1,92	1,85
2 to 3	2,90	2,75	2,90	2,82
3 to 4	3,98	3,89	3,89	3,92

[1] Some temperatures below 0°C were noticed but the samples were not frozen.

3.2.3.2 *Results obtained by the collaborators*

Samples were sent to 14 collaborators.

- ***Mesophilic aerobic microflora***

The mesophilic aerobic microflora was done on the matrix with ISO 4833 method. The results varied from 22 000 to 480 000 CFU/ml.

- ***Coliforms enumeration***

A summary of the test results is given in **Table 12** (CFU/g) and **Table 13** (log CFU/g).

Table 12 - Summary of data (CFU/g)

Collaborator	Level 0				Level 1				Level 2				Level 3			
	Reference method		Alternative method		Reference method		Alternative method		Reference method		Alternative method		Reference method		Alternative method	
A	<10	<10	<10	<10	75	45	80	50	660	750	750	640	5800	5900	6600	8200
B	<1	<1	<1	<1	79	90	94	81	960	1000	1000	730	12000	9400	11000	9400
C	<10	<10	<10	<10	86	100	80	50	760	740	530	720	8700	8700	7800	7100
D	<10	<10	<10	<10	40	50	80	90	820	660	790	660	6300	8000	7400	5700
E	<1	<1	<1	<1	75	76	93	63	990	730	920	840	9500	8500	6800	9500
F	<1	<1	<1	<1	80	82	85	76	1200	820	1000	750	12000	13000	7100	8800
G	<10	<10	<10	<10	45	73	50	110	760	670	550	580	7100	8000	5800	6900
H	<1	<1	<1	<1	70	76	61	60	700	750	810	750	8200	8000	8000	8500
I	<1	<1	<1	<1	73	82	73	85	980	1000	900	810	10000	11000	9700	8500
J	<1	<1	<1	<1	70	68	65	69	860	730	770	800	7300	8100	8300	8100
K	<10	<10	<10	<10	110	80	80	50	780	750	710	750	8400	7100	8400	7800
L	<10	<10	<10	<10	130	77	110	80	900	630	630	790	8500	7400	7500	8700
M	<1	<1	<1	<1	72	66	71	66	830	710	820	780	8300	9100	9600	8500
N	<1	<1	<1	<1	72	76	73	65	890	780	820	930	9700	9500	9000	9000

Table 13 - Summary of data (log CFU/g)

Collabo-rator	Level 0				Level 1				Level 2				Level 3			
	Reference method		Alternative method		Reference method		Alternative method		Reference method		Alternative method		Reference method		Alternative method	
A	<1,00	<1,00	<1,00	<1,00	1,875	1,653	1,903	1,699	2,820	2,875	2,875	2,806	3,763	3,771	3,820	3,914
B	<0,00	<0,00	<0,00	<0,00	1,898	1,954	1,973	1,908	2,982	3,000	3,000	2,863	4,079	3,973	4,041	3,973
C	<1,00	<1,00	<1,00	<1,00	1,934	2,000	1,903	1,699	2,881	2,869	2,724	2,857	3,940	3,940	3,892	3,851
D	<1,00	<1,00	<1,00	<1,00	1,602	1,699	1,903	1,954	2,914	2,820	2,898	2,820	3,799	3,903	3,869	3,756
E	<0,00	<0,00	<0,00	<0,00	1,875	1,881	1,968	1,799	2,996	2,863	2,964	2,924	3,978	3,929	3,833	3,978
F	<0,00	<0,00	<0,00	<0,00	1,903	1,914	1,929	1,881	3,079	2,914	3,000	2,875	4,079	4,114	3,851	3,944
G	<1,00	<1,00	<1,00	<1,00	1,653	1,863	1,699	2,041	2,881	2,826	2,740	2,763	3,851	3,903	3,763	3,839
H	<0,00	<0,00	<0,00	<0,00	1,845	1,881	1,785	1,778	2,845	2,875	2,908	2,875	3,914	3,903	3,903	3,929
I	<0,00	<0,00	<0,00	<0,00	1,863	1,914	1,863	1,929	2,991	3,000	2,954	2,908	4,000	4,041	3,987	3,929
J	<0,00	<0,00	<0,00	<0,00	1,845	1,833	1,813	1,839	2,934	2,863	2,886	2,903	3,863	3,908	3,919	3,908
K	<1,00	<1,00	<1,00	<1,00	2,041	1,903	1,903	1,699	2,892	2,875	2,851	2,875	3,924	3,851	3,924	3,892
L	<1,00	<1,00	<1,00	<1,00	2,114	1,886	2,041	1,903	2,954	2,799	2,799	2,898	3,929	3,869	3,875	3,940
M	<0,00	<0,00	<0,00	<0,00	1,857	1,820	1,851	1,820	2,919	2,851	2,914	2,892	3,919	3,959	3,982	3,929
N	<0,00	<0,00	<0,00	<0,00	1,857	1,881	1,863	1,813	2,949	2,892	2,914	2,968	3,987	3,978	3,954	3,954

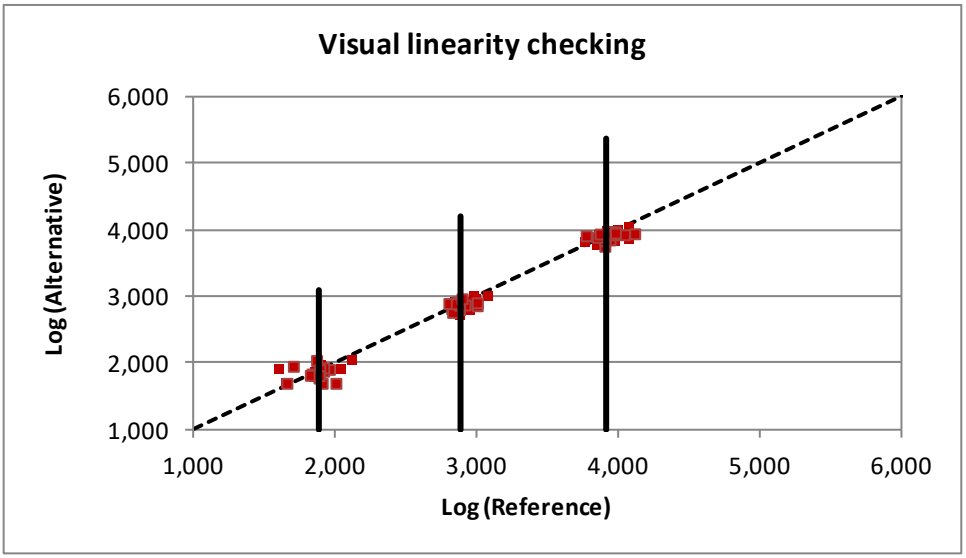
Some labs enumerated the dilution -1, -2, -3 instead of the dilution 0, -1, -2, -3 this explains the results obtained for level 0 (< 1 or < 10 CFU/ml).

3.2.4 Calculation and interpretation

3.2.4.1 Visual linearity checking

The **Figure 9** shows the data points after $\log_{10}$ transformation. The visual inspection shows that the alternative method gives results, which are proportional to those of the reference method. The data are distributed closely to the first bisecting lines with a slope equal to 1.

Figure 9 - Visual linearity checking



3.2.4.2 Accuracy profile calculation

Statistical calculations were done according to the Excel spreadsheet available on http://standards.iso.org/ISO/16140. A summary of the statistical test is provided in **Table 14**.

Table 14 - Summary of statistical tests

Accuracy profile			
Study Name	CHROMID Coli		
Date	2006		
Coordinator	ADRIA Développement		
Tolerance probability (beta)	80%	80%	80%
Acceptability limit in log (lambda)	0,50	0,50	0,50

Application of clause 6.2.3
Step 8: If any of the values for the β-ETI fall outside the acceptability limits, calculate the pooled average reproducibility standard deviation of the reference method.
Step 9: Calculate new acceptability limits as a function of this standard deviation.

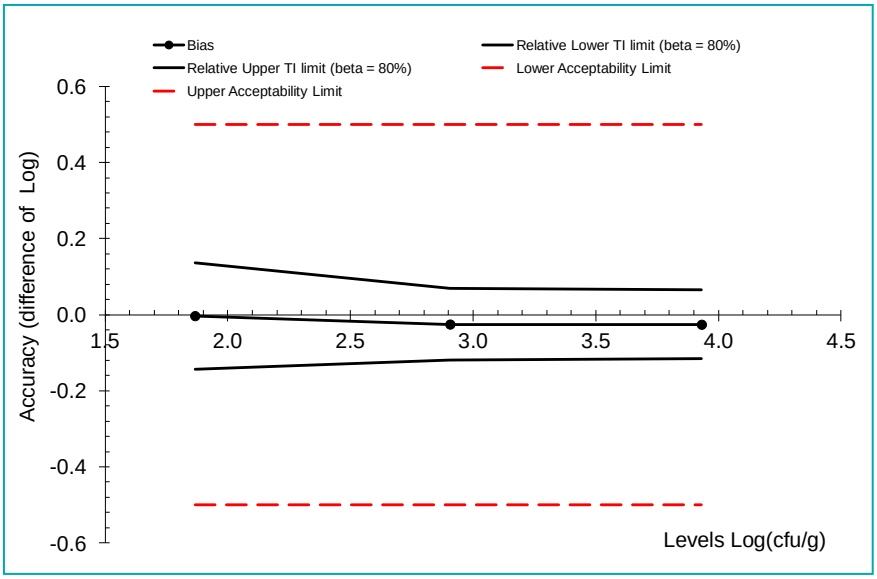
	Alternative method			Reference method		
Levels	**Low**	**Medium**	**High**	**Low**	**Medium**	**High**
Target value	**1,866**	**2,906**	**3,931**			
Number of participants (K)	14	14	14	14	14	14
Average for alternative method	1,863	2,881	3,905	1,866	2,906	3,931
Repeatability standard deviation (sr)	0,105	0,054	0,052	0,082	0,059	0,039
Between-labs standard deviation (sL)	0,000	0,045	0,042	0,074	0,033	0,078
Reproducibility standard deviation (sR)	0,105	0,070	0,067	0,111	0,068	0,087
Corrected number of dof	26,963	22,584	22,749	21,761	25,138	15,871
Coverage factor	1,337	1,353	1,352			
Interpolated Student t	1,314	1,320	1,320			
Tolerance interval standard deviation	0,1067	0,0719	0,0684			
Lower TI limit	1,723	2,786	3,815			
Upper TI limit	2,003	2,976	3,996			
Bias	**-0,003**	**-0,025**	**-0,026**			
Relative Lower TI limit (beta = 80%)	**-0,143**	**-0,120**	**-0,116**			
Relative Upper TI limit (beta = 80%)	**0,137**	**0,070**	**0,065**			
Lower Acceptability Limit	**-0,50**	**-0,50**	**-0,50**			
Upper Acceptability Limit	**0,50**	**0,50**	**0,50**			

New acceptability limits may be based on reference method pooled variance

Pooled repro standard dev of reference	0,090

These values are collected in a graphical representation together with the acceptability limits (AL). This representation is given **Figure 10**.

Figure 10 - Accuracy profile



It is observed that for all the levels, the tolerance interval limits of the alternative method are within the acceptable limits of ± 0.5 log.

The results obtained with the alternative method are not statically different than those obtained with the reference method.

3.2.4.3 Conclusion

The alternative method is equivalent to the reference method.

4 CONCLUSION

The observed data and interpretation confirm the performances of the alternative method:

- **177 samples were tested in the relative trueness study, providing 135 interpretable results by both methods** which clearly satisfied the required criteria for quantitative method comparison per ISO 16140-2.

- **The observed profiles are comprised within the AL set at ± 0.5 Log CFU/g in the EN ISO 16140-2:2016.**

- **The inclusivity and exclusivity testing shows satisfying results.**

- **The quality assurance parameters were verified (targeted levels, strain stability, logistic conditions, analyses), confirming that the inter-laboratory study was conducted in appropriate conditions.**

- **The data interpretations were done according to the EN ISO 16140-2:2016. For the three contamination levels, the alternative method is accepted as equivalent to the reference method.**

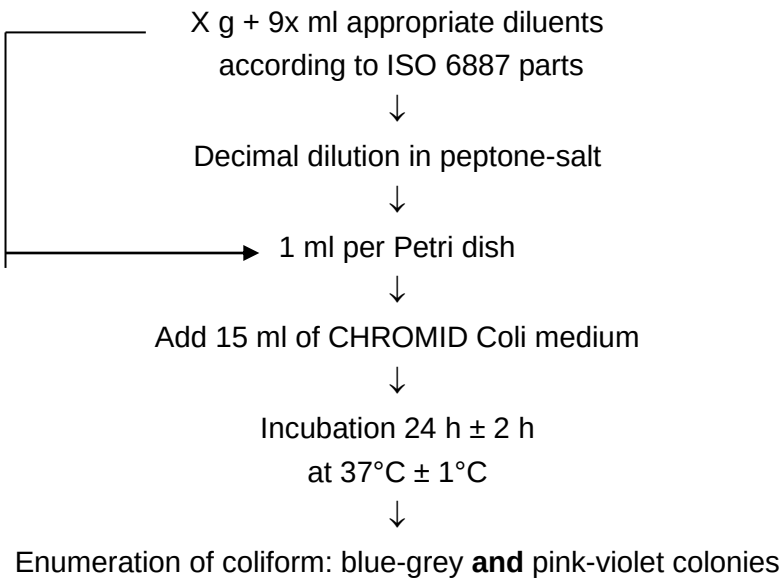
Based on the results obtained for the method comparison study and the inter-laboratory study, the alternative method is considered equivalent to the reference method.

Quimper, 03 November 2022

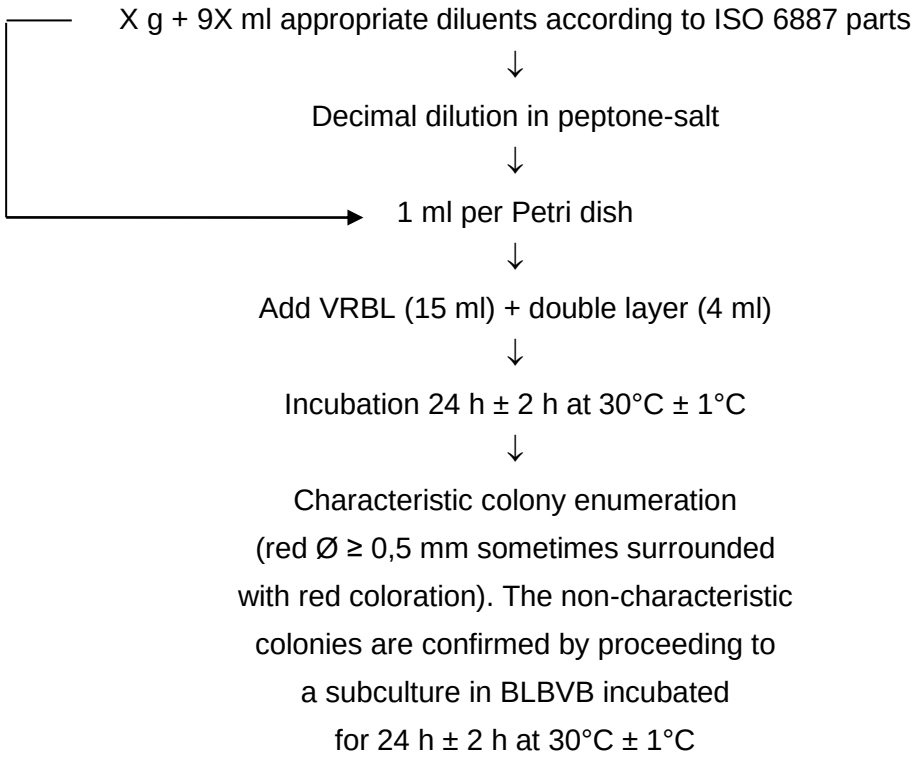
Maryse RANNOU
Project Manager
Validation of Alternative methods

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

Appendix 1 - Flow diagram of the alternative method: CHROMID Coli (Coli ID-F) for the enumeration of coliforms



Appendix 2 – Flow diagram of the reference method: NF ISO 4832 (2006): Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coliforms — Colony-count technique



Appendix 3 – Artificial contaminations of samples

Analysis date	Sample N°	Product (French name)	Product	Artificial contamination			Category	Type
				Strain	Origin	Injury		
2011	**2370**	**Escalope de dinde**	**Turkey escalope**	*Escherichia coli* Ad 218	Poultry	Seeding 7 days at 4°C	1	a
2011	**2474**	**Blanc de poulet**	**White chicken meat**	*Escherichia coli* Ad 218	Poultry	Seeding heat treatment 10 min 56°C	1	a
2011	**2152**	**Saucisses fumées bio**	**Smoked sausages**	*Escherichia coli* 21	Cured breast	Seeding heat treatment 10 min 56°C	1	b
2011	**2153**	**Saucisses de Montbéliard**	**Montbéliard sausage**	*Escherichia coli* 21	Cured breast	Seeding heat treatment 10 min 56°C	1	b
2011	**2185**	**Saucisses natures**	**Sausages**	*Escherichia coli* 6	Sausage	Seeding 6 days at 4°C	1	b
2011	**2471**	**Chorizo**	**Chorizo**	*Escherichia coli* 1	Pork	Seeding heat treatment 10 min 56°C	1	b
2011	**2472**	**Chorizo**	**Chorizo**	*Escherichia coli* 1	Pork	Seeding heat treatment 10 min 56°C	1	b
2011	**2473**	**Saucisson à l'ail**	**Garlic sausage**	*Escherichia coli* 1	Pork	Seeding heat treatment 10 min 56°C	1	b
2011	**2477**	**Filets de bacon fumé**	**Smoked bacon**	*Escherichia coli* 21	Pork	Seeding 7 days at 4°C	1	b
2011	**2478**	**Poitrine fumée tranches fines**	**Sliced bacon**	*Escherichia coli* 1	Pork	Seeding 7 days at 4°C	1	b
2011	**2479**	**Jambon cru**	**Raw ham**	*Escherichia coli* 21	Pork	Seeding 7 days at 4°C	1	b
2011	**2059**	**Chili con carné**	**Chilli con carne**	*Escherichia coli* 144	Paella	Seeding heat treatment 15 min 56°C	1	c
2011	**2065**	**Nems au porc**	**Pork nem**	*Escherichia coli* 108	Bouchées à la reine	Seeding heat treatment 10 min 56°C	1	c
2011	**2066**	**Ravioli chinois au porc**	**Chinese ready to eat food**	*Escherichia coli* 108	Ready to cook meal	Seeding heat treatment 15 min 56°C	1	c
2011	**2151**	**Sandwich jambon œuf crudités**	**Sandwich (ham and vegetables)**	*Escherichia coli* Ad 222	Egg product	Seeding 4°C 48 h	1	c
2011	**2368**	**Sandwich jambon œuf tomate**	**Ham, tomato and egg sandwich**	*Escherichia coli* 101	Pork	Seeding heat treatment 10 min 56°C	1	c
2011	**2369**	**Jambon cuit à la broche**	**Cooked ham**	*Escherichia coli* 101	Pork	Seeding heat treatment 10 min 56°C	1	c

Analysis date	Sample N°	Product (French name)	Product	Artificial contamination			Category	Type
				Strain	Origin	Injury		
2018	**6297**	**Lait en poudre écrémé**	Skimmed milk powder	*Escherichia coli* Ad1816	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	2	c
2018	**6298**	**Lait en poudre écrémé**	Skimmed milk powder	*Escherichia coli* 118	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	2	c
2018	**6299**	**Lait en poudre entier**	Milk powder	*Escherichia coli* Ad1816	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	2	c
2018	**6300**	**Lait en poudre entier**	Milk powder	*Escherichia coli* 118	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	2	c
2018	**6301**	**Lait en poudre écrémé**	Skimmed milk powder	*Escherichia coli* 118	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	2	c
2018	**6723**	**Filet de julienne**	Fish fillet	*Escherichia coli* Ad1384	Sea water	Seeding 48 h 3 ± 2°C	3	a
2018	**6724**	**Filet de Merlan**	Fish fillet	*Escherichia coli* Ad1384	Sea water	Seeding 48 h 3 ± 2°C	3	a
2018	**6725**	**Bar**	Fish	*Escherichia coli* Ad1384	Sea water	Seeding 48 h 3 ± 2°C	3	a
2018	**6726**	**Lamelles d'encornet géant**	Squids	*Escherichia coli* Ad1385	Sea water	Seeding 48 h 3 ± 2°C	3	a
2018	**6727**	**Encornet criée**	Squids	*Escherichia coli* Ad1385	Sea water	Seeding 48 h 3 ± 2°C	3	a
2018	**6728**	**Crevettes crues décortiquées**	Raw shrimps	*Escherichia coli* Ad1385	Sea water	Seeding 48 h 3 ± 2°C	3	a
2018	**6729**	**Noix de saint jacques**	Scallops	*Escherichia coli* Ad1385	Sea water	Seeding 48 h 3 ± 2°C	3	a
2011	**2122**	**Sandwich saumon fumé ciboulette**	**Sandwich (smoked salmon and chives)**	*Escherichia coli* 93	Ready to cook cod	Seeding 4°C 8 days	3	b
2011	**2061**	**Nems au crabe**	**Crab nem**	*Escherichia coli* 93	Ready to cook cod	Seeding heat treatment 15 min 56°C	3	c
2011	**2150**	**Salade de pâtes saumon mayonnaise**	**Pasta salad (salmon and mayonnaise)**	*Escherichia coli* Ad 222	Egg product	Seeding heat treatment 10 min 56°C	3	c
2011	**2120**	**Ratatouille surgelée**	**Frozen ratatouille**	*Escherichia coli* 19	Sliced carrots	Seeding -20°C 8 days	4	b
2011	**2183**	**Quiche aux poireaux surgelée**	**Frozen links quiche**	*Escherichia coli* 142	Egg product	Seeding 6 days at -20°C	4	b
2011	**2367**	**Tarte tomate poivron surgelée**	**Frozen tomato and pepper pie**	Escherichia coli 142	Egg product	Seeding 7 days -20°C	4	b

Analysis date	Sample N°	Product (French name)	Product	Artificial contamination			Category	Type
				Strain	Origin	Injury		
2011	**2058**	**Ratatouille**	**Ratatouille**	*Escherichia coli* 19	Grated carrots	Seeding heat treatment 15 min 56°C	4	c
2011	**2060**	**Carottes en lamelles cuites**	**Cooked sliced carrots**	*Escherichia coli* 144	Paella	Seeding heat treatment 10 min 56°C	4	c
2011	**2121**	**Salade boulghour légumes du soleil**	**Salad (bulghur and vegetables)**	*Escherichia coli* 19	Sliced carrots	Seeding 4°C 8 days	4	c
2011	**2123**	**Taboulé à l'orientale**	**Oriental tabbouleh**	*Escherichia coli* 108	Ready to cook meal	Seeding 4°C 8 days	4	c
2011	**2148**	**Riz à la provençale thon basilic**	**Cooked rice (tuna and basil)**	*Escherichia coli* 93	Ready to cook cod	Seeding heat treatment 10 min 56°C	4	c
2011	**2149**	**Quiche aux légumes**	**Vegetables quiche**	*Escherichia coli* 93	Ready to cook cod	Seeding heat treatment 10 min 56°C	4	c
2011	**2363**	**Salade carotte céleri**	**Carrots celery salad**	*Escherichia coli* 19	Sausage	Seeding 7 days at 4°C	4	c
2011	**2365**	**Macédoine de légumes**	**Mixed vegetables**	*Escherichia coli* 144	Paella	Seeding heat treatment 10 min 56°C	4	c
2011	**2366**	**Macédoine de légumes**	**Mixed vegetables**	*Escherichia coli* 142	Egg product	Seeding heat treatment 10 min 56°C	4	c
2011	**2483**	**Piémontaise au jambon**	**Salad (Piémontaise)**	*Escherichia coli* 108	Ready to eat meal	Seeding heat treatment 10 min 56°C	4	c
2018	**6730**	**Mayonnaise fraiche**	Mayonnaise	*Escherichia coli* 143	Egg product	Seeding 48 h 3 ± 2°C	5	b
2018	**6731**	**Tortilla espagnole aux oignons**	Tortilla with onions	*Escherichia coli* 143	Egg product	Seeding 48 h 3 ± 2°C	5	b
2011	**2062**	**Tartelette cocktail**	**Cocktail pie**	*Escherichia coli* Ad 222	Egg product	Seeding heat treatment 15 min 56°C	5	c
2011	**2063**	**Tartelette cocktail**	**Cocktail pie**	*Escherichia coli* 142	Egg product	Seeding heat treatment 10 min 56°C	5	c
2011	**2064**	**Tartelette fraise**	**Strawberries pie**	*Escherichia coli* Ad 222	Egg product	Seeding heat treatment 10 min 56°C	5	c

Appendix 4 - Relative trueness study: raw data

MEAT AND MEAT PRODUCTS																										
Analysis date	Sample N°	Product (French name)	Product	Reference method: ISO 4832♦											Alternative method: CHROMID® (COLI ID-F) for the enumeration of coliforms										Category	Type
				Dilution	Rep 1		Rep 2		Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)		Dilution	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)				
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g (rounded)	CFU/g (rounded)	log CFU/g	log CFU/g	log CFU/g			CFU/ plate	CFU/ plate	CFU/g	CFU/g	log CFU/g	log CFU/g	log CFU/g				
2006	562	Sauté de veau	Raw veal meat	100	36	36	29	52	3600	4200	3,56	3,62	3,56		100	25	27	2700	2800	3,43	3,45	3,43		1	a
				1000	5	3	6	5							1000	5	4								
2006	563	Paupiette de veau	Ready to cook veal meal	10	3	1	2	0	20	10	1,30*	1,00*	1,30*		10	1	1	10	10	1,00*	1,00*	1,00*		1	b
				100	0	0	0	0							100	0	1								
2006	564	Paupiette de veau	Ready to cook veal meal	10	0	2	1	0	10	5	1,00*	0,70*	1,00*		10	1	0	10	<10	1,00*	<1	1,00*		1	b
				100	0	0	0	0							100	1	0	Ne							
2006	589	Tartare	Tartar	10	7	6	9	10	65	95	1,81	1,98	1,81		10	3	3	30	30	1,48*	1,48*	1,48*		1	c
				100	0	1	0	0					Ne		100	0	0								
2006	590	Saucisse	Sausages	10	40	24	44	45	330	450	2,52	2,65	2,52		10	76	88	720	910	2,86	2,96	2,86		1	b
				100	3	5	4	6							100	3	12								
2006	591	Saucisse	Sausages	10	9	9	7	8	90	75	1,95	1,88	1,95		10	5	7	50	70	1,70	1,85	1,70		1	b
				100	2	1	1	1					Ne		100	0	0					Ne			
2006	592	Chair à saucisse	Sausage meat	10	15	12	12	11	130	120	2,11	2,08	2,11		10	3	1	30	10	1,48*	1,00*	1,48*		1	b
				100	1	1	1	2							100	0	0	Ne	Ne						
2006	594	Sauté de porc	Raw pork meat	10	5	4	6	5	45	55	1,65	1,74	1,65		10	0	1	<10	10	<1,00	1,00	<1,00		1	a
				100	0	0	0	0					Ne		100	0	0								
2006	596	Viande blanche	Raw poultry meat	10	16	15	12	19	160	160	2,20	2,20	2,20		10	25	16	230	160	2,36	2,20	2,36		1	a
				100	3	2	2	2							100	0	2								
2006	628	Viande de porc	Raw pork meat	10000	>150	>150	>150	>150	2000000	2700000	6,30	6,43	6,30		10000	>150	>150	7400000	3700000	6,87	6,57	6,87		1	a
				100000	26	13	22	32							100000	74	37					N'			
2006	633	Andouille	Chitterlings	1000	17	17	19	26	16000	22000	4,20	4,34	4,20		100	>150	>150	15000	20000	4,18	4,30	4,18		1	b
				10000	1	1	1	3							1000	14	20								
2006	634	Saucisson à l'ail	Delicatessen sausage)	100	3	6	1	6	450	350	2,65	2,54	2,65		100	1	0	100	<100	2,00*	<2,00	2,00*		1	b
				1000	1	0	0	3					Ne		1000	0	0								
2006	635	Saucisse	Sausage	100	5	5	37	28	500	3300	2,70	3,52	2,70		100	25	24	2500	2300	3,40	3,36	3,40		1	b
				1000	0	0	5	2							1000	3	1								
2006	636	Porc cuisiné au piment	Ready to reheat pork	100	29	27	29	34	2800	3300	3,45	3,52	3,45		100	22	24	2200	2500	3,34	3,40	3,34		1	c
				1000	3	4	6	3							1000	2	4								
2006	638	Merguez	Merguez	1000	56	51	57	47	54000	54000	4,73	4,73	4,73		1000	44	52	45000	53000	4,65	4,72	4,65		1	b
				10000	4	8	6	8							10000	6	6								
2006	639	Escalope de dinde	Raw turkey meat	100	98	70	83	82	8900	9500	3,95	3,98	3,95		100	44	40	4300	3800	3,63	3,58	3,63		1	a
				1000	12	15	24	20							1000	3	2								
2006	640	Escalope de poulet	Raw chicken meat	1000	11	4	8	5	7500	6500	3,88	3,81	3,88		100	35	30	3600	2900	3,56	3,46	3,56		1	a
				10000	0	0	0	0							1000	5	2								
2006	642	Bouchées à la reine	Ready to heat meal	10	>150	>150	>150	>150	950	1300	2,98	3,11	2,98		10	Background flora>300		ND	ND	ND	ND	ND		1	c
				100	11	8	13	12							100										

♦ Analyses performed according to the COFRAC accreditation

MEAT AND MEAT PRODUCTS																																		
Analysis date	Sample N°	Product (French name)	Product	Reference method: ISO 4832♦																Alternative method: CHROMID® (COLI ID-F) for the enumeration of coliforms														Category	Type
				Dilution	Rep 1		Rep 2		Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)							Dilution	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)								
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g (rounded)	CFU/g (rounded)	log CFU/g	log CFU/g	log CFU/g								CFU/ plate	CFU/ plate	CFU/g	CFU/g	log CFU/g	log CFU/g	log CFU/g								
2011	1865	Chipolatas surgelées	Frozen sausages	10	15				150		2,18		2,18							10	0		<10		<1,00		<1,00						1	b
				100	1															100	0													
2011	1866	Brochette de dinde	Turkey skewer	1000	>150				1200000		6,08		6,08							1000	126		120000		5,08		5,08						1	a
				10000	121															10000	7													
2011	1867	Brochette de dinde colombo	Colombo turkey skewer	10	>150				>15000		>4,18		>4,18							10	>150		>15000		>4,18		>4,18						1	a
				100	>150															100	>150													
2011	1868	Viande d'épaule de dinde saumurée	Cured turkey meat	100	67				7000		3,85		3,85							100	67		6500		3,81		3,81						1	a
				1000	10															1000	5													
2011	1869	Chipolatas	Sausages	100	20				2200		3,34		3,34							10	81		820		2,91		2,91						1	b
				1000	4															100	9													
2011	1870	Chipolatas	Sausages	100	16				1500		3,18		3,18							10	80		780		2,89		2,89						1	b
				1000	1															100	6													
2011	1871	Saucisse fumée	Smoked sausage	100	17				1800		3,26		3,26							10	46		440		2,64		2,64						1	b
				1000	3															100	2													
2011	1911	Paupiette bardée	Ready to cook veal meal	10	111				1100		3,04		3,04							10	64		620		2,79		2,79						1	b
				100	9															100	4													
2011	1912	Paupiette bardée	Ready to cook veal meal	10	111				1200		3,08		3,08							10	66		640		2,81		2,81						1	b
				100	20															100	4													
2011	1913	Viande d'échine de dinde broyée	Ground turkey meat	1000	ND				110000		5,04		5,04							100	20		2300		3,36		3,36						1	a
				10000	11															1000	5													
2011	1915	Carcasse de dinde	Turkey carcass	1000	30				31000		4,49		4,49							100	69		6800		3,83		3,83						1	a
				10000	4															1000	6													
2011	1916	Viande rouge de dinde dénervée	Turkey red meat	100	13				1300		3,11		3,11							10	99		940		2,97		2,97						1	a
				1000	1															100	4													
2011	1917	VSM de poulet	Chicken mechanically deboned meat	1000	>150				400000		5,60		5,60							1000	30		32000		4,51		4,51						1	a
				10000	40															10000	5													
2011	1918	Cornet de porc	Pork meat	100	101				10000		4,00		4,00							100	66		6500		3,81		3,81						1	a
				1000	11															1000	5													
2011	1919	PV 3 mm Porc	Pork meat	1000	89				90000		4,95		4,95							1000	73		70000		4,85		4,85						1	a
				10000	10															10000	4													
2011	**2059**	**Chili con carné**	**Chilli con carne**	10	>150				3000		3,48		3,48							10	>150		1000		3,00		3,00						1	c
				100	30															100	10													
2011	**2065**	**Nems au porc**	**Pork nem**	100	59				5600		3,75		3,75							100	27		2500		3,40		3,40						1	c
				1000	3															1000	1													
2011	**2066**	**Ravioli chinois au porc**	**Chinese ready to eat food**	10	92				940		2,97		2,97							10	10		100		2,00		2,00						1	c
				100	11															100	1													
2011	**2151**	**Sandwich jambon œuf crudités**	**Sandwich (ham and vegetables)**	100	46				4600		3,66		3,66							100	34		3300		3,52		3,52						1	c
				1000	5															1000	2													
2011	**2152**	**Saucisses fumées bio**	**Smoked sausages**	10	63				640		2,81		2,81							10	44		450		2,65		2,65						1	b
				100	7															100	5													

MEAT AND MEAT PRODUCTS																							
Analysis date	Sample N°	Product (French name)	Product	Reference method: ISO 4832♦										Alternative method: CHROMID® (COLI ID-F) for the enumeration of coliforms								Category	Type
				Dilution	Rep 1		Rep 2		Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)	Dilution	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)		
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g (rounded)	CFU/g (rounded)	log CFU/g	log CFU/g	log CFU/g		CFU/ plate	CFU/ plate	CFU/g	CFU/g	log CFU/g	log CFU/g	log CFU/g		
2011	**2153**	**Saucisses de Montbéliard**	**Montbéliard sausage**	100	42				4000		3,60		3,60	100	46		4400		3,64		3,64	1	b
				1000	2									1000	2								
2011	**2185**	**Saucisses natures**	**Sausages**	100	48				4800		3,68		3,68	100	13		1300		3,11		3,11	1	b
				1000	5									1000	1								
2011	**2368**	**Sandwich jambon œuf tomate**	**Ham, tomato and egg sandwich**	10	>150				2600		3,41		3,41	10	74		730		2,86		2,86	1	c
				100	26									100	6								
2011	**2369**	**Jambon cuit à la broche**	**Cooked ham**	10	9				100		2,00		2,00	10	8		80		1,90		1,90	1	c
				100	2									100	1								
2011	**2370**	**Escalope de dinde**	**Turkey cutley**	10	109				1200		3,08		3,08	10	117		1200		3,08		3,08	1	a
				100	18									100	12								
2011	**2471**	**Chorizo**	**Chorizo**	100	37				3500		3,54		3,54	10	50		530		2,72		2,72	1	b
				1000	2									100	8								
2011	**2472**	**Chorizo**	**Chorizo**	100	23				2500		3,40		3,40	10	107		1100		3,04		3,04	1	b
				1000	5									100	16								
2011	**2473**	**Saucisson à l'ail**	**Garlic sausage**	100	77				7600		3,88		3,88	100	51		5800		3,76		3,76	1	b
				1000	7									1000	13								
2011	**2474**	**Blanc de poulet**	**White chicken meat**	1000	>150				700000		5,85		5,85	1000	>150		380000		5,58		5,58	1	a
				10000	70									10000	38								
2011	**2477**	**Filets de bacon fumé**	**Smoked bacon**	100	28				2700		3,43		3,43	100	23		2400		3,38		3,38	1	b
				1000	2									1000	3								
2011	**2478**	**Poitrine fumée tranches fines**	**Sliced bacon**	100	>150				15000		4,18		4,18	100	>150		17000		4,23		4,23	1	b
				1000	15									1000	17								
2011	**2479**	**Jambon cru**	**Raw ham**	1000	41				39000		4,59		4,59	1000	12		16000		4,20		4,20	1	b
				10000	2									10000	6								

MILK AND DAIRY PRODUCTS																																		
Analysis date	Sample N°	Product (French name)	Product	Reference method: ISO 4832♦																		Alternative method: CHROMID® (COLI ID-F) for the enumeration of coliforms														Category	Type
				Dilution	Rep 1		Rep 2		Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)									Dilution	Rep 1		Rep 2		Rep 1	Rep 2	Result (Rep 1)							
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g (rounded)	CFU/g (rounded)	log CFU/g	log CFU/g	log CFU/g										CFU/ plate	CFU/ plate	CFU/g	CFU/g	log CFU/g	log CFU/g	log CFU/g							
2006	725	Lait cru	Raw milk	100	>150	>150	>150	>150	39000	52000	4,59	4,72	4,59									100	>150	>150	36000	55000	4,56	4,74	4,56						2	a
				1000	40	37	61	42														1000	36	55					N'							
2006	726	Rocamadour	Raw milk cheese (Rocamadour)	100	20	24	16	28	2300	2200	3,36	3,34	3,36									100	18	23	1600	2400	3,20	3,38	3,20						2	b
				1000	3	3	0	4														1000	0	3												
2006	727	Mozzarella	Mozzarella	100	>150	>150	>150	>150	68000	63000	4,83	4,80	4,83									100	>150	>150	54000	63000	4,73	4,80	4,73						2	b
				1000	65	71	56	69					N'									1000	54	63												
2006	824	Lait cru	Raw milk	10	105	133	128	128	1200	1300	3,08	3,11	3,08									1	>150	>150	1400	1400	3,15	3,15	3,15						2	a
				100	11	12	10	12														10	137	140												
2006	826	Mozzarella	Mozzarella	10	17	16	18	18	160	200	2,20	2,30	2,20									10	13	13	130	130	2,11	2,11	2,11						2	b
				100	1	2	3	4														100	2	0												
2006	842	Lait cru	Raw milk	100	>150	>150	>150	>150	>150000	>150000	>5,18	>5,18	>5,18									10	>150	>150	8300	7000	3,92	3,85	3,92						2	a
				1000	>150	>150	>150	>150														100	83	70												
2006	847	Crottin de chèvre	Goat cheese	1000	>150	>150	>150	>150	>1500000	>1500000	>6,18	>6,18	>6,18									1000	>150	>150	>1500000	>1500000	>6,18	>6,18	>6,18						2	b
				10000	>150	>150	>150	>150														10000	>150	>150												
2006	848	Crottin de chèvre	Goat cheese	100	>150	>150	>150	>150	>150000	>150000	>5,18	>5,18	>5,18									100	>150	>150	>150000	>150000	>5,18	>5,18	>5,18						2	b
				1000	>150	>150	>150	>150														1000	>150	>150												
2006	1143	Lait	Milk	100	17	10	20	28	1400	2400	3,15	3,38	3,15									100	17	26	1600	2500	3,20	3,40	3,20						2	a
				1000	2	2	4	1														1000	1	2												
2006	1145	Fromage Maredsous	Cheese	100	2	0	2	0	100	100	2,00	2,00	2,00									100	0	0	<100	<100	<2,00	<2,00	<2,00						2	b
				1000	0	0	0	0	Ne	Ne												1000	0	0												
2006	1146	Raclette	Cheese (Raclette)	100	2	1	1	1	130	100	2,11	2,00	2,11									100	0	2	<100	200	<2,00	2,30*	<2,00						2	b
				1000	0	0	0	0	Ne	Ne												1000	0	0												
2006	1270	Poudre de lait	Milk powder	100	31	37	13	28	3200	1900	3,51	3,28	3,51									100	17	24	1600	2400	3,20	3,38	3,20						2	c
				1000	1	1	1	0														1000	1	2												
2006	1271	Poudre de lait	Milk powder	100	45	33	56	49	3700	5300	3,57	3,72	3,57									100	119	80	11000	8000	4,04	3,90	4,04						2	c
				1000	0	3	6	6														1000	7	8												
2006	1272	Poudre de lait	Milk powder	10	10	5	9	13	75	110	1,88	2,04	1,88									10	11	10	110	100	2,04	2,00	2,04						2	c
				100	0	1	1	0					Ne									100	1	1												
2006	1273	Glace fraise	Strawberries ice cream	10	0	0	0	0	<10	<10	<1,00	<1,00	<1,00									10	2	3	20	30	1,30*	1,48*	1,30*						2	b
				100	0	0	0	0														100	0	0												
2006	1274	Glace poire	Pear ice cream	10	0	0	0	0	<10	<10	<1,00	<1,00	<1,00									10	0	0	<10	<10	<1,00	<1,00	<1,00						2	b
				100	0	0	0	0														100	0	0												
2006	1290	Crème fraiche	Cream	100	133	142	>150	>150	14000	23000	4,15	4,36	4,15									100	19	36	1800	3500	3,26	3,54	3,26						2	b
				1000	12	14	23	22														1000	1	2												
2018	6418	Lait cru	Raw milk	100	24				2400		3,38		3,38									100	34		3400		3,53		3,53						2	a
				1000	2																	1000	3													
2018	6419	Brie de Meaux	Raw milk cheese	100000	14				1400000		6,15		6,15									10000	4		40000		4,60		4,60						2	b
				1000000	1																	100000	0		Ne										

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MILK AND DAIRY PRODUCTS																							
Analysis date	Sample N°	Product (French name)	Product	Reference method: ISO 4832♦										Alternative method: CHROMID® (COLI ID-F) for the enumeration of coliforms								Category	Type
				Dilution	Rep 1		Rep 2		Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)	Dilution	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)		
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g (rounded)	CFU/g (rounded)	log CFU/g	log CFU/g	log CFU/g		CFU/ plate	CFU/ plate	CFU/g	CFU/g	log CFU/g	log CFU/g	log CFU/g		
2018	6420	Riz au lait	Dairy dessert	100	69				6600		3,82		3,82	10	4		40		1,60		1,60	2	b
				1000	4									100	0		Ne		Ne				
2018	6167	Lait cru	Raw milk	10	42				400		2,60		2,60	10	23		250		2,40		2,40	2	a
				100	2									100	4								
2018	6168	Lait cru	Raw milk	10	22				220		2,34		2,34	10	27		260		2,41		2,41	2	a
				100	2									100	2								
2018	6283	Fromage Roquefort au Lait cru	Raw milk cheese (Roquefort)	10	0				<10		<1,00		<1,00	10	0		<10		<1,00		<1,00	2	b
				100	0									100	0								
2018	6284	Fromage selles sur cher au lait cru	Raw milk cheese (Selles sur Cher)	100	>150				>150000		>5,18		>5,18	100	>150		>150000		>5,18		>5,18	2	b
				1000	>150									1000	>150								
2018	**6297**	**Lait en poudre écrémé**	Skimmed milk powder	10	0				<10		<1,00		<1,00	10	0		<10		<1,00		<1,00	2	c
				100	0									100	0								
2018	**6298**	**Lait en poudre écrémé**	Skimmed milk powder	10	3				30		1,48*		1,48*	10	2		20		1,30*		1,30*	2	c
				100	0									100	0								
2018	**6299**	**Lait en poudre entier**	Milk powder	10	2				20		1,30*		1,30*	10	0		<10		<1,00		<1,00	2	c
				100	0									100	0								
2018	**6300**	**Lait en poudre entier**	Milk powder	10	96				920		2,96		2,96	10	68		700		2,85		2,85	2	c
				100	5									100	9								
2018	**6301**	**Lait en poudre écrémé**	Skimmed milk powder	100	29				2900		3,46		3,46	100	18		1700		3,23		3,23	2	c
				1000	3									1000	1								

SEAFOOD PRODUCTS																													
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				Dilution	Rep 1		Rep 2		Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)							Dilution	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)		
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g (rounded)	CFU/g (rounded)	log CFU/g	log CFU/g	log CFU/g								CFU/ plate	CFU/ plate	CFU/g	CFU/g	log CFU/g	log CFU/g	log CFU/g		
2006	637	Gambas aux légumes	Ready to reheat prawns	100	32	41	31	55	3900	4500	3,59	3,65	3,59							100	33	33	3000	3200	3,48	3,51	3,48	3	c
				1000	5	7	6	6												1000	0	2							
2006	843	Terrine de saumon	Salmon terrine	10	14	13	9	7	140	80	2,15	1,90	2,15							10	9	11	90	110	1,95	2,04	1,95	3	c
				100	2	2	2	2												100	0	1							
2006	1280	Salade Alaska	Deli salad	10000	25	23	26	47	240000	350000	5,38	5,54	5,38							10000	122	76	1200000	780000	6,08	5,89	6,08	3	c
				100000	3	1	2	3												100000	10	10							
2006	1281	Saumon en dés	Salmon cubes	1000	14	9	16	19	11000	18000	4,04	4,26	4,04							1000	75	74	76000	74000	4,88	4,87	4,88	3	c
				10000	1	0	3	1												10000	9	7							
2006	1282	Torti au surimi	Ready to eat pasta	100	63	53	65	69	6000	6600	3,78	3,82	3,78							100	32	18	3400	1800	3,53	3,26	3,53	3	c
				1000	10	7	3	8												1000	5	2							
2006	1283	Cocktail de crevettes	Cooked shrimps	1000	17	21	13	18	19000	15000	4,28	4,18	4,28							1000	39	26	39000	29000	4,59	4,46	4,59	3	c
				10000	2	1	1	1												10000	4	6							
2006	1284	Surimi	Surimi	100	124	103	139	133	11000	13000	4,04	4,11	4,04							1000	18	23	19000	23000	4,28	4,36	4,28	3	c
				1000	13	11	13	11												10000	3	2							
2006	1285	Saumon à l'oseille	Ready to reheat salmon	100	109	94	106	109	10000	11000	4,00	4,04	4,00							1000	37	26	39000	25000	4,59	4,40	4,59	3	c
				1000	11	11	13	11												10000	6	1							
2006	1286	Salade de fruits de mer	Seafood salad	100	24	25	30	39	2500	3700	3,40	3,57	3,40							100	10	20	1000	1900	3,00	3,28	3,00	3	c
				1000	3	3	9	3												1000	1	1							
2006	1342	Filet de loup de mer	Fish fillet	100	13	10	13	20	1200	1700	3,08	3,23	3,08 Ne							100	10	7	1000	700	3,00	2,85	3,00	3	a
				1000	3	2	1	5												1000	0	0							
2006	1343	Filet de dorade	Fish fillet	100	12	11	11	10	1200	1100	3,08	3,04	3,08 Ne							100	12	11	1200	1100	3,08	3,04	3,08	3	a
				1000	2	3	3	2												1000	1	1							
2006	1344	Filet Haddock fumé	Haddock fillet	100	14	8	10	10	1100	1000	3,04	3,00	3,04 Ne							100	5	6	500	600	2,70	2,78	2,70 Ne	3	b
				1000	2	0	1	2												1000	0	2							
2006	1345	Saumon fumé	Smoked salmon	100	9	7	14	10	800	1200	2,90	3,08	2,90 Ne							100	8	5	800	500	2,90	2,70	2,90 Ne	3	b
				1000	0	1	0	0												1000	0	0							
2006	1650	Filets de saumon	Salmon fillet	100	56	42	48	45	4600	4600	3,66	3,66	3,66							100	66	53	6400	5400	3,81	3,73	3,81	3	a
				1000	2	2	4	4												1000	4	6							
2006	1651	Brochettes de saumon	Salmon skewers	10	151	128	137	149	1400	1400	3,15	3,15	3,15							10	121	136	1300	1400	3,11	3,15	3,11	3	a
				100	11	18	13	14												100	18	22							
2006	1652	Sardines	Pilchards	10	1	2	3	2	15	25	1,18*	1,40*	1,18*							10	0	0	<10	<10	<1,00	<1,00	<1,00	3	a
				100	0	0	0	0												100	0	0							
2006	1653	Maquereau	Mackerel	10	0	0	0	0	<10	<10	<1,00	<1,00	<1,00							10	1	0	5	<10	0,70*	<1,00	0,70*	3	a
				100	0	0	0	0												100	0	0							
2006	1654	Terrine de St Jacques	Scallops terrine	100	>150	>150	>150	>150	130000	200000	5,11	5,30	5,11							100	>150	>150	110000	120000	5,04	5,08	5,04	3	c
				1000	129	130	116	151												1000	110	120							
2006	1655	Terrine de saumon	Salmon terrine	100	>150	>150	>150	>150	130000	140000	5,11	5,15	5,11							100	>150	>150	140000	160000	5,15	5,20	5,15	3	c
				1000	131	125	132	138												1000	137	162							
2006	1656	Terrine de filets de saumon au champagne	Salmon terrine	100	>150	>150	>150	>150	140000	140000	5,15	5,15	5,15							100	>150	>150	130000	140000	5,11	5,15	5,11	3	c
				1000	148	141	148	136												1000	128	138							
2006	1657	Carpaccio de saumon	Salmon Carpaccio	1000	>150	>150	>150	>150	510000	440000	5,71	5,64	5,71							1000	>150	>150	320000	300000	5,51	5,48	5,51	3	b
				10000	56	45	51	37												10000	32	30							
2006	1658	Pâtés impériaux crabes et crevettes	Ready to eat seafood	1000	>150	>150	>150	>150	430000	460000	5,63	5,66	5,63							1000	>150	>150	240000	200000	5,38	5,30	5,38	3	c
				10000	58	28	46	45												10000	24	20							

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				Dilution	Rep 1		Rep 2		Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)							Dilution	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)				
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g (rounded)	CFU/g (rounded)	log CFU/g	log CFU/g	log CFU/g								CFU/ plate	CFU/ plate	CFU/g	CFU/g	log CFU/g	log CFU/g	log CFU/g				
2006	1659	Nems crabes crevettes	Ready to reheat seafood	1000	103	113	145	115	110000	130000	5,04	5,11	5,04							1000	86	88	86000	85000	4,93	4,93	4,93				
				10000	15	19	13	19												10000	9	6									
2006	1691	Terrine d'écrevisse à l'armoricaine	Crayfish terrine	100	34	36	36	39	3700	4000	3,57	3,60	3,57							100	24	32	2500	3200	3,40	3,51	3,40				
				1000	4	7	6	8												1000	4	3									
2006	1692	Toast'n sea au saumon fumé	Salmon toasts	100	28	25	19	20	2700	2100	3,43	3,32	3,43							100	13	17	1300	1700	3,11	3,23	3,11				
				1000	4	2	5	2												1000	0	2									
2006	1693	Poisson sauce blanche	Ready to reheat fish	10	78	76	69	73	810	730	2,91	2,86	2,91							10	51	47	510	490	2,71	2,69	2,71				
				100	14	10	9	10												100	5	7									
2011	**2061**	**Nems au crabe**	**Crab nem**	10	110				1200		3,08		3,08							10	74		730		2,86		2,86				
				100	13															100	6										
2011	**2122**	**Sandwich saumon fumé ciboulette**	**Sandwich (smoked salmon and chives)**	1000	32				34000		4,53		4,53							1000	31		30000		4,48		4,48				
				10000	5															10000	2										
2011	**2150**	**Salade de pâtes saumon mayonnaise**	**Pasta salad (salmon and mayonnaise)**	10	127				1300		3,11		3,11							10	72		700		2,85		2,85				
				100	12															100	5										
2018	6169	Encornet rouge	Red squids	10	19				210		2,32		2,32							10	23		240		2,38		2,38				
				100	4															100	3										
2018	6170	Accras de morue	Cod fritters	10	0				<10		<1,00		<1,00							10	0		<10		<1,00		<1,00				
				100	0															100	0										
2018	6279	Poisson plat préparé	Ready to reheat fish	100	>150				34000		4,53 N'		4,53							100	>150		3800		3,58 N'		3,58				
				1000	34															1000	38										
2018	6280	Plat cuisiné au saumon	Ready to reheat salmon	10	0				<10		<1,00		<1,00							10	0		<10		<1,00		<1,00				
				100	0															100	0										
2018	6402	Homard Européen	Lobster	10	0				<10		<1,00		<1,00							10	0		<10		<1,00		<1,00				
				100	0															100	0										
2018	**6723**	**Filet de julienne**	Fish fillet	10	>150				>15000		>4,18		>4,18							10	>150		>15000		>4,18		>4,18				
				100	>150															100	>150										
2018	**6724**	**Filet de Merlan**	Fish fillet	100	>150				>150000		>5,18		>5,18							100	>150		17000		4,23 N'		4,23				
				1000	>150															1000	17										
2018	**6725**	**Bar**	Fish	1000	>150				>1500000		>6,18		>6,18							1000	36		40000		4,60		4,60				
				10000	>150															10000	8										
2018	**6726**	**Lamelles d'encornet géant**	Squids	100	>150				125000		5,10 N'		5,10							100	>150		21000		4,32 N'		4,32				
				1000	125															1000	21										
2018	**6727**	**Encornet criée**	Squids	1000	61				65000		4,81		4,81							1000	51		49000		4,69		4,69				
				10000	10															10000	3										
2018	**6728**	**Crevettes crues décortiquées**	Raw shrimps	1000	69				72000		4,86		4,86							1000	34		35000		4,54		4,54				
				10000	10															10000	4										
2018	**6729**	**Noix de Saint Jacques**	Scallops	1000	132				130000		5,11		5,11							1000	76		75000		4,88		4,88				
				10000	11															10000	6										

VEGETABLES																									
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				Dilution	Rep 1		Rep 2		Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)		Dilution	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)			
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g (rounded)	CFU/g (rounded)	log CFU/g	log CFU/g	log CFU/g			CFU/ plate	CFU/ plate	CFU/g	CFU/g	log CFU/g	log CFU/g	log CFU/g			
2006	593	Piémontaise	Deli salad (piémontaise)	10	6	5	4	4	55	40	1,74	1,60	1,60		10	3	5	30	50	1,48*	1,70	1,70		4	c
				100	0	0	0	0					Ne		100	0	0								
2006	627	Choux de Bruxelles	Brussels sprouts	10	6	4	5	2	50	35	1,70	1,54	1,70		10	0	0	<10	<10	<1,00	<1,00	<1,00		4	a
				100	0	0	0	0					Ne		100	0	0								
2006	629	Haricots verts	Green beans	10	2	3	0	2	25	10	1,40*	1,00*	1,40*		10	0	0	<10	<10	<1,00	<1,00	<1,00		4	a
				100	0	0	0	0							100	0	0								
2006	630	Courgettes	Courgette	10	0	0	0	0	<10	<10	<1,00	<1,00	<1,00		10	0	0	<10	<10	<1,00	<1,00	<1,00		4	a
				100	0	0	0	0							100	0	0								
2006	631	Poêlée de légumes aux champignons surgelée	Frozen vegetables mix	10	0	0	0	0	<10	<10	<1,00	<1,00	<1,00		10	0	0	<10	<10	<1,00	<1,00	<1,00		4	b
				100	0	0	0	0							100	0	0								
2006	844	Carottes râpées	Grated carrots	10	17	23	15	9	180	110	2,26	2,04	2,26		10	4	5	40	50	1,60	1,70	1,60		4	c
				100	0	0	0	0							100	0	0					Ne			
2006	845	Céleri rémoulade	Deli salad (celery)	100	>150	>150	>150	>150	24000	20000	4,38	4,30	4,38		100	>150	>150	22000	29000	4,34	4,46	4,34		4	c
				1000	29	18	25	14							1000	22	29								
2006	1275	Haricots verts	Green beans	100	>150	>150	>150	>150	23000	12000	4,36	4,08	4,36		100	>150	>150	>150000	>150000	>5,18	>5,18	>5,18		4	a
				1000	25	20	14	10					N'		1000	>150	>150								
2006	1276	Julienne de légumes surgelée	Frozen vegetables mix	100	>150	>150	>150	>150	>150000	>150000	>5,18	>5,18	>5,18		100	>150	>150	>150000	>150000	>5,18	>5,18	>5,18		4	b
				1000	>150	>150	>150	>150							1000	>150	>150								
2006	1277	Poivrons verts	Green pepper	100	>150	>150	>150	>150	47000	38000	4,67	4,58	4,67		100	>150	>150	>150000	>150000	>5,18	>5,18	>5,18		4	a
				1000	41	52	45	30					N'		1000	>150	>150								
2006	1278	Chou cuit	Cooked cabbage	10	8	8	9	11	80	100	1,90	2,00	1,90		10	19	13	170	120	2,23	2,08	2,23		4	c
				100	2	1	1	1					Ne		100	0	0								
2006	1279	Salade de poireaux	Deli salad (leeks)	100	>150	>150	>150	>150	>150000	>150000	>5,18	>5,18	>5,18		100	>150	>150	>150000	>150000	>5,18	>5,18	>5,18		4	c
				1000	>150	>150	>150	>150							1000	>150	>150								
2006	1346	Salade mêlée	Salad	1000	>150	>150	>150	>150	300000	370000	5,48	5,57	5,48		1000	>150	>150	260000	130000	5,41	5,11	5,41		4	a
				10000	39	20	43	31							10000	26	13								
2006	1347	Mélange crudités	Salad (vegetables mix)	1000	>150	>150	>150	>150	1120000	1220000	6,05	6,09	6,05		1000	>150	>150	1000000	750000	6,00	5,88	6,00		4	c
				10000	98	126	127	117							10000	101	75								
2006	1348	Courgette rondelles surgelées	Sliced courgette	100	4	6	9	7	500	800	2,70	2,90	2,70		100	1	3	100	300	2,00*	2,18*	2,00*		4	b
				1000	1	0	0	0					Ne		1000	0	0								
2006	1349	Poêlée champêtre surgelée	Frozen vegetables mix	100	5	5	4	6	500	500	2,70	2,70	2,70		100	0	7	<100	700	<2,00	2,85	2,85		4	b
				1000	1	1	0	1					Ne		1000	0	0								
2006	1390	Poireaux coupés	Sliced links	1000	72	63	69	80	69000	77000	4,84	4,89	4,84		1000	55	55	60000	56000	4,78	4,75	4,78		4	a
				10000	12	5	11	9							10000	11	7								
2006	1391	Epinards à la crème surgelés	Frozen spinach with cream	10000	64	61	88	99	620000	1020000	5,79	6,01	5,79		10000	79	73	780000	750000	5,89	5,88	5,89		4	b
				100000	5	7	23	15							100000	7	9								
2006	1392	Haricots verts	Green beans	1000	90	103	113	66	100000	94000	5,00	4,97	5,00		1000	92	96	97000	93000	4,99	4,97	4,99		4	a
				10000	19	10	15	13							10000	15	6								

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VEGETABLES																									
Analysis date	Sample N°	Product (French name)	Product	Reference method: ISO 4832♦											Alternative method: CHROMID® (COLI ID-F) for the enumeration of coliforms									Category	Type
				Dilution	Rep 1		Rep 2		Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)		Dilution	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)			
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g (rounded)	CFU/g (rounded)	log CFU/g	log CFU/g	log CFU/g			CFU/ plate	CFU/ plate	CFU/g	CFU/g	log CFU/g	log CFU/g	log CFU/g			
2006	1393	Poireaux émincés	Sliced links	1000	70	64	65	61	69000	71000	4,84	4,85	4,84		1000	73	70	73000	75000	4,86	4,88	4,86		4	a
				10000	8	10	11	19							10000	7	13								
2006	1394	Brocolis	Broccolis	1000	91	89	105	88	92000	100000	4,96	5,00	4,96		1000	81	64	79000	68000	4,90	4,83	4,90		4	a
				10000	10	12	12	16							10000	6	11								
2011	**2058**	**Ratatouille**	**Ratatouille**	10	15				150		2,18		2,18		10	4		40		1,60		1,60		4	c
				100	1										100	1									
2011	**2060**	**Carottes en lamelles cuites**	**Cooked sliced carrots**	10	42				440		2,64		2,64		100	19		2000		3,30		3,30		4	c
				100	6										1000	3									
2011	**2120**	**Ratatouille surgelée**	**Frozen ratatouille**	10	42				420		2,62		2,62		10	29		300		2,48		2,48		4	b
				100	4										100	4									
2011	**2121**	**Salade boulghour légumes du soleil**	**Salad (bulghur and vegetables)**	100	91				9300		3,97		3,97		100	94		9100		3,96		3,96		4	c
				1000	11										1000	6									
2011	**2123**	**Taboulé à l'orientale**	**Oriental tabouleh**	10	13				150		2,18		2,18		10	1		10		1,00*		1,00*		4	c
				100	3										100	0									
2011	**2148**	**Riz à la provençale thon basilic**	**Cooked rice (tuna and basil)**	100	70				6600		3,82		3,82		100	11		1100		3,04		3,04		4	c
				1000	3										1000	1									
2011	**2149**	**Quiche aux légumes**	**Vegetables quiche**	10	142				1400		3,15		3,15		10	145		1400		3,15		3,15		4	c
				100	11										100	12									
2011	**2183**	**Quiche aux poireaux surgelée**	**Frozen links quiche**	1000	71				67000		4,83		4,83		1000	38		38000		4,58		4,58		4	b
				10000	3										10000	4									
2011	**2363**	**Salade carotte céleri**	**Carrots celery salad**	10	43				460		2,66		2,66		10	33		310		2,49		2,49		4	c
				100	7										100	1									
2011	**2365**	**Macédoine de légumes**	**Mixed vegetables**	10	14				130		2,11		2,11		10	5		50		1,70		1,70		4	c
				100	0										100	0									
2011	**2366**	**Macédoine de légumes**	**Mixed vegetables**	100	>150				37000		4,57		4,57		100	>150		17000		4,23		4,23		4	c
				1000	37										1000	17									
2011	**2367**	**Tarte tomate poivron surgelée**	**Frozen tomato and pepper pie**	1000	>150				27000		4,43		4,43		1000	>150		270000		5,43		5,43		4	b
				10000	27										10000	27									
2011	**2483**	**Piémontaise au jambon**	**Salad (Piémontaise)**	100	101				10000		4,00		4,00		100	56		5500		3,74		3,74		4	c
				1000	12										1000	5									

EGGS AND EGG BASED PRODUCTS																												Category	Type
Analysis date	Sample N°	Product (French name)	Product	Reference method: ISO 4832♦																Alternative method: CHROMID® (COLI ID-F) for the enumeration of coliforms											
				Dilution	Rep 1		Rep 2		Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)							Dilution	Rep 1		Rep 2		Rep 1	Rep 2	Result (Rep 1)		
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g (rounded)	CFU/g (rounded)	log CFU/g	log CFU/g	log CFU/g								CFU/ plate	CFU/ plate			CFU/g	CFU/g	log CFU/g	log CFU/g	log CFU/g		
2006	587	Baba au rhum	Pastry	10	4	10	6	3	70	45	1,85	1,65	1,85							10	8	2		80	20	1,90	1,30*	1,90	5	c
				100	0	0	0	0					Ne							100	0	0						Ne		
2006	588	Meringue chocolat	Meringue	10	6	7	8	9	65	85	1,81	1,93	1,81							10	12	20		120	190	2,08	2,28	2,08	5	b
				100	1	0	1	1					Ne							100	1	1								
2006	728	Coule d'œuf	Liquid egg product	1000	>150	>150	>150	>150	1200000	1100000	6,08	6,04	6,08							1000	>150	>150		830000	680000	5,92	5,83	5,92	5	a
				10000	127	122	105	108					N'							10000	83	68								
2006	827	Coule d'œuf	Liquid egg product	10	19	16	14	9	170	130	2,23	2,11	2,23							10	22	19		240	170	2,38	2,23	2,38	5	a
				100	0	3	3	3												100	4	0								
2006	1137	Coule d'œuf entier	Liquid egg product	1000	15	17	47	34	15000	41000	4,18	4,61	4,18							1000	14	17		15000	18000	4,18	4,26	4,18	5	a
				10000	2	0	5	5												10000	2	3								
2006	1138	Œufs brouillés	Scrambled eggs	1000	22	22	37	28	22000	35000	4,34	4,54	4,34							1000	11	12		10000	13000	4,00	4,11	4,00	5	a
				10000	1	3	8	3												10000	0	2								
2006	1139	Coule d'œuf	Liquid egg product	1000	41	47	46	54	42000	53000	4,62	4,72	4,62							1000	28	35		29000	35000	4,46	4,54	4,46	5	a
				10000	1	4	10	6												10000	4	4								
2006	1140	Coule d'œuf	Liquid egg product	1000	18	16	27	23	17000	25000	4,23	4,40	4,23							1000	13	24		13000	24000	4,11	4,38	4,11	5	a
				10000	1	2	2	4												10000	1	2								
2006	1141	Eclair au chocolat	Pastry	1000	30	20	22	15	26000	18000	4,41	4,26	4,41							1000	20	20		21000	20000	4,32	4,30	4,32	5	c
				10000	5	3	1	1												10000	3	2								
2006	1142	Eclair au café	Pastry	1000	28	24	23	37	27000	30000	4,43	4,48	4,43							1000	22	19		22000	18000	4,34	4,26	4,34	5	c
				10000	2	5	4	1												10000	2	1								
2006	1144	Flan noix de coco	Egg based dessert	100	2	1	0	1	150	50	2,18	1,70	2,18							100	1	0		100	<100	2,00*	<2,00	2,00*	5	b
				1000	0	0	0	0	Ne	Ne										1000	0	0								
2006	1291	Chou à la crème	Pastry	100	111	100	88	71	10000	8100	4,00	3,91	4,00							100	18	17		1800	1700	3,26	3,23	3,26	5	c
				1000	6	9	12	7												1000	0	0								
2006	1292	Crêpes	Pancakes	10	12	8	14	9	110	110	2,04	2,04	2,04							10	9	10		90	100	1,95	2,00	1,95	5	b
				100	1	2	1	0												100	1	1						Ne		
2006	1293	Crêpes	Pancakes	10	7	7	9	8	70	85	1,85	1,93	1,85							10	10	14		100	140	2,00	2,15	2,00	5	b
				100	0	1	2	3					Ne							100	1	3								
2011	**2062**	**Tartelette cocktail**	**Cocktail pie**	10	34				380		2,58		2,58							10	17			190		2,28		2,28	5	c
				100	8															100	4									
2011	**2063**	**Tartelette cocktail**	**Cocktail pie**	100	31				3000		3,48		3,48							100	14			1300		3,11		3,11	5	c
				1000	2															1000	0									

♦ Analyses performed according to the COFRAC accreditation

EGGS AND EGG BASED PRODUCTS																																			
Analysis date	Sample N°	Product (French name)	Product	Reference method: ISO 4832♦																		Alternative method: CHROMID® (COLI ID-F) for the enumeration of coliforms														Category	Type
				Dilution	Rep 1		Rep 2		Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)									Dilution	Rep 1	Rep 2	Rep 1	Rep 2	Rep 1	Rep 2	Result (Rep 1)								
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g (rounded)	CFU/g (rounded)	log CFU/g	log CFU/g	log CFU/g										CFU/ plate	CFU/ plate	CFU/g	CFU/g	log CFU/g	log CFU/g	log CFU/g								
2011	**2064**	**Tartelette fraise**	**Strawberries pie**	1000	35				34000		4,53		4,53									1000	28		26000		4,41		4,41						5	c
				10000	2																	10000	1												
2018	6171	Tarte aux fraises	Pastry	10	11				120		2,08		2,08									10	12		120		2,08		2,08						5	c
				100	2																	100	1												
2018	6278	Quiche lorraine	Quiche lorraine	10	2				20		1,30*		1,30*									10	1		<10		<1,00		<1,00						5	b
				100	0																	100	0												
2018	6281	Tarte aux fraises	Pastry	10	7				70		1,85		1,85									10	0		<10		<1,00		<1,00						5	c
				100	1						Ne											100	0												
2018	6282	Pâtisserie aux fruits	Pastry	10	12				120		2,08		2,08									10	12		120		2,08		2,08						5	c
				100	1																	100	0												
2018	**6730**	**Mayonnaise fraiche**	Mayonnaise	100	69				7100		3,85		3,85									100	61		6200		3,79		3,79						5	b
				1000	9																	1000	7												
2018	**6731**	**Tortilla espagnole aux oignons**	Tortilla with onions	1000	81				75000		4,88		4,88									1000	54		58000		4,76		4,76						5	b
				10000	2																	10000	10												

Appendix 5 - Relative trueness study: calculations

Category	N° sample	Product	Log cfu/g		Average	Difference	Alternative method		Average <4 CFU/plate	Difference <4 CFU/plate	Average corrected values	Difference Corrected values
			Reference method	Alternative method			<4 CFU/plate	<or> threshold corrected values				
1	562	Raw veal meat	3,56	3,43	3,49	-0,12			#N/A		#N/A	
	594	Raw pork meat	1,65		#N/A			0,00	#N/A		0,83	-1,65
	596	Raw poultry meat	2,20	2,36	2,28	0,16			#N/A		#N/A	
	628	Raw pork meat	6,30	6,87	6,59	0,57			#N/A		#N/A	
	639	Raw turkey meat	3,95	3,63	3,79	-0,32			#N/A		#N/A	
	640	Raw chicken meat	3,88	3,56	3,72	-0,32			#N/A		#N/A	
	1866	Turkey skewer	6,08	5,08	5,58	-1,00			#N/A		#N/A	
	1867	Columbo turkey skewer	5,18		#N/A			5,18	#N/A		5,18	0,00
	1868	Cured turkey meat	3,85	3,81	3,83	-0,03			#N/A		#N/A	
	1913	Ground turkey meat	5,04	3,36	4,20	-1,68			#N/A		#N/A	
	1915	Turkey carcass	4,49	3,83	4,16	-0,66			#N/A		#N/A	
	1916	Turkey red meat	3,11	2,97	3,04	-0,14			#N/A		#N/A	
	1917	Chicken mechanically deboned meat	5,60	4,51	5,05	-1,10			#N/A		#N/A	
	1918	Pork meat	4,00	3,81	3,91	-0,19			#N/A		#N/A	
	1919	Pork meat	4,95	4,85	4,90	-0,11			#N/A		#N/A	
	2370	**Turkey cutlet**	3,08	3,08	3,08	0,00			#N/A		#N/A	
	2474	**White chicken meat**	5,85	5,58	5,71	-0,27			#N/A		#N/A	
	563	Ready to cook veal meal	1,30		#N/A		1,00		1,15	-0,30	#N/A	
	564	Ready to cook veal meal	1,00		#N/A		1,00		1,00	0,00	#N/A	
	590	Sausages	2,52	2,86	2,69	0,34			#N/A		#N/A	
	591	Sausages	1,95	1,70	1,83	-0,26			#N/A		#N/A	
	592	Sausage meat	2,11		#N/A		1,48		1,80	-0,63	#N/A	
	633	Chitterlings	4,20	4,18	4,19	-0,03			#N/A		#N/A	
	634	Delicatessen (Sausage)	2,65		#N/A		2,00		2,33	-0,65	#N/A	
	635	Sausage	2,70	3,40	3,05	0,70			#N/A		#N/A	
	638	Merguez	4,73	4,65	4,69	-0,08			#N/A		#N/A	
	1865	Frozen sausages	2,18		#N/A			0,00	#N/A		1,09	-2,18
	1869	Sausages	3,34	2,91	3,13	-0,43			#N/A		#N/A	
	1870	Sausages	3,18	2,89	3,03	-0,28			#N/A		#N/A	
	1871	Smoked sausage	3,26	2,64	2,95	-0,61			#N/A		#N/A	
	1911	Ready to cook veal meal	3,04	2,79	2,92	-0,25			#N/A		#N/A	
	1912	Ready to cook veal meal	3,08	2,81	2,94	-0,27			#N/A		#N/A	
	2152	**Smoked sausages**	2,81	2,65	2,73	-0,15			#N/A		#N/A	
	2153	**Montbéliard sausage**	3,60	3,64	3,62	0,04			#N/A		#N/A	
	2185	**Sausages**	3,68	3,11	3,40	-0,57			#N/A		#N/A	
	2471	**Chorizo**	3,54	2,72	3,13	-0,82			#N/A		#N/A	
	2472	**Chorizo**	3,40	3,04	3,22	-0,36			#N/A		#N/A	
	2473	**Garlic sausage**	3,88	3,76	3,82	-0,12			#N/A		#N/A	
	2477	**Smoked bacon**	3,43	3,38	3,41	-0,05			#N/A		#N/A	
	2478	**Sliced bacon**	4,18	4,23	4,20	0,05			#N/A		#N/A	
	2479	**Raw ham**	4,59	4,20	4,40	-0,39			#N/A		#N/A	
	589	Tartar	1,81		1,65	-0,33	1,48		1,65	-0,33	#N/A	
	636	Ready to reheat pork	3,45	3,34	3,39	-0,10			#N/A		#N/A	
	642	Ready to heat meal	2,98		#N/A				#N/A		#N/A	
	2059	**Chilli con carne**	3,48	3,00	3,24	-0,48			#N/A		#N/A	
	2065	**Pork nem**	3,75	3,40	3,57	-0,35			#N/A		#N/A	
	2066	**Chinese ready to eat food**	2,97	2,00	2,49	-0,97			#N/A		#N/A	
	2151	**Sandwich (ham and vegetables)**	3,66	3,52	3,59	-0,14			#N/A		#N/A	
	2368	**Ham, tomato and egg sandwich**	3,41	2,86	3,14	-0,55			#N/A		#N/A	
	2369	**Cooked ham**	2,00	1,90	1,95	-0,10			#N/A		#N/A	
Average category 1						**-0,28**						
Standard deviation of differences category 1						**0,43**						
2	725	Raw milk	4,59	4,56	4,57	-0,03			#N/A		#N/A	
	824	Raw milk	3,08	3,15	3,11	0,07			#N/A		#N/A	
	842	Raw milk	6,18		#N/A			3,92	#N/A		5,05	-2,26
	1143	Milk	3,15	3,20	3,18	0,06			#N/A		#N/A	
	6418	Raw milk	3,38	3,53	3,46	0,15			#N/A		#N/A	
	6167	Raw milk	2,60	2,40	2,50	-0,20			#N/A		#N/A	
	6168	Raw milk	2,34	2,41	2,38	0,07			#N/A		#N/A	
	726	Raw milk cheese (Rocamadour)	3,36	3,20	3,28	-0,16			#N/A		#N/A	
	727	Mozzarella	4,83	4,73	4,78	-0,10			#N/A		#N/A	
	826	Mozzarella	2,20	2,11	2,16	-0,09			#N/A		#N/A	
	847	Goat cheese	7,18		#N/A			7,18	#N/A		7,18	0,00
	848	Goat cheese	6,18		#N/A			6,18	#N/A		6,18	0,00
	1145	Cheese	2,00		#N/A			1,00	#N/A		1,50	-1,00
	1146	Cheese (Raclette)	2,11		#N/A			1,00	#N/A		1,56	-1,11
	1273	Strawberries ice cream	0,00		#N/A			1,30	#N/A		0,65	1,30
	1274	Pear ice cream	0,00		#N/A			0,00	#N/A		0,00	0,00
	1290	Cream	4,15	3,26	3,70	-0,89			#N/A		#N/A	
	6419	Raw milk cheese	6,15	4,60	5,37	-1,54			#N/A		#N/A	
	6420	Dairy dessert	3,82	1,60	2,71	-2,22			#N/A		#N/A	
	6283	Raw milk cheese (Roquefort)	0,00		#N/A			0,00	#N/A		0,00	0,00
	6284	Raw milk cheese (Selles sur Cher)	6,18		#N/A			6,18	#N/A		6,18	0,00
	1270	Milk powder	3,51	3,20	3,35	-0,30			#N/A		#N/A	
	1271	Milk powder	3,57	4,04	3,80	0,47			#N/A		#N/A	
	1272	Milk powder	1,88	2,04	1,96	0,17			#N/A		#N/A	
	6297	Skimmed milk powder	0,00		#N/A			0,00	#N/A		0,00	0,00
	6298	Skimmed milk powder	1,48		#N/A		1,30		1,39	-0,18	#N/A	
	6299	Milk powder	1,30		#N/A			0,00	#N/A		0,65	-1,30
	6300	Milk powder	2,96	2,85	2,90	-0,12			#N/A		#N/A	
	6301	Skimmed milk powder	3,46	3,23	3,35	-0,23			#N/A		#N/A	
Average category 2						**-0,29**						
Standard deviation of differences category 2						**0,67**						

Category	N° sample	Product	Log cfu/g		Average	Difference	Alternative method		Average <4 CFU/plate	Difference <4 CFU/plate	Average corrected values	Difference Corrected values
			Reference method	Alternative method			<4 CFU/plate	<or> threshold corrected values				
3	1342	Fish fillet	3,08	3,00	3,04	-0,08			#N/A		#N/A	
	1343	Fish fillet	3,08	3,08	3,08	0,00			#N/A		#N/A	
	1650	Salmon fillet	3,66	3,81	3,73	0,14			#N/A		#N/A	
	1651	Salmon skewers	3,15	3,11	3,13	-0,03			#N/A		#N/A	
	1652	Pilchards	1,18		#N/A			0,00	#N/A		0,59	-1,18
	1653	Mackerel	0,00		#N/A			0,70	#N/A		0,35	0,70
	6169	Red squids	2,32	2,38	2,35	0,06			#N/A		#N/A	
	6402	Lobster	0,00		#N/A			0,00	#N/A		0,00	0,00
	6723	Fish fillet	5,18		#N/A			5,18	#N/A		5,18	0,00
	6724	Fish fillet	6,18		#N/A			4,23	#N/A		5,21	-1,95
	6725	Fish	7,18		#N/A			4,60	#N/A		5,89	-2,58
	6726	Squids	5,10	4,32	4,71	-0,77			#N/A		#N/A	
	6727	Squids	4,81	4,69	4,75	-0,12			#N/A		#N/A	
	6728	Raw shrimps	4,86	4,54	4,70	-0,31			#N/A		#N/A	
	6729	Scallops	5,11	4,88	4,99	-0,24			#N/A		#N/A	
	1344	Haddock fillet	3,04	2,70	2,87	-0,34			#N/A		#N/A	
	1345	Smoked salmon	2,90	2,90	2,90	0,00			#N/A		#N/A	
	1657	Salmon carpaccio	5,71	5,51	5,61	-0,20			#N/A		#N/A	
	1692	Salmon toasts	3,43	3,11	3,27	-0,32			#N/A		#N/A	
	2122	**Sandwich (smoked salmon and chives)**	4,53	4,48	4,50	-0,05			#N/A		#N/A	
	637	Ready to reheat prawns	3,59	3,48	3,53	-0,11			#N/A		#N/A	
	843	Salmon terrine	2,15	1,95	2,05	-0,19			#N/A		#N/A	
	1280	Deli salad	5,38	6,08	5,73	0,70			#N/A		#N/A	
	1281	Salmon cubes	4,04	4,88	4,46	0,84			#N/A		#N/A	
	1282	Ready to eat pasta	3,78	3,53	3,65	-0,25			#N/A		#N/A	
	1283	Cooked shrimps	4,28	4,59	4,43	0,31			#N/A		#N/A	
	1284	Surimi	4,04	4,28	4,16	0,24			#N/A		#N/A	
	1285	Ready to reheat salmon	4,00	4,59	4,30	0,59			#N/A		#N/A	
	1286	Seafood salad	3,40	3,00	3,20	-0,40			#N/A		#N/A	
	1654	Scallops terrine	5,11	5,04	5,08	-0,07			#N/A		#N/A	
	1655	Salmon terrine	5,11	5,15	5,13	0,03			#N/A		#N/A	
	1656	Salmon terrine	5,15	5,11	5,13	-0,03			#N/A		#N/A	
	1658	Ready to eat seafood	5,63	5,38	5,51	-0,25			#N/A		#N/A	
	1659	Ready to reheat seafood	5,04	4,93	4,99	-0,11			#N/A		#N/A	
	1691	Crayfish terrine	3,57	3,40	3,48	-0,17			#N/A		#N/A	
	1693	Ready to reheat fish	2,91	2,71	2,81	-0,20			#N/A		#N/A	
	2061	**Crab nem**	3,08	2,86	2,97	-0,22			#N/A		#N/A	
	2150	**Pasta salad (salmon and mayonnaise)**	3,11	2,85	2,98	-0,27			#N/A		#N/A	
	6170	Cod fritters	0,00		#N/A			0,00	#N/A		0,00	0,00
	6279	Ready to reheat fish	4,53	3,58	4,06	-0,95			#N/A		#N/A	
	6280	Ready to reheat salmon	0,00		#N/A			0,00	#N/A		0,00	0,00
Average category 3						**-0,08**						
Standard deviation of differences category 3						**0,35**						
4	627	Brussels sprouts	1,70		#N/A			0,00	#N/A		0,85	-1,70
	629	Green beans	1,40		#N/A			0,00	#N/A		0,70	-1,40
	630	Courgette	0,00		#N/A			0,00	#N/A		0,00	0,00
	1275	Green beans	4,36		#N/A			6,18	#N/A		5,27	1,82
	1277	Green pepper	4,67		#N/A			6,18	#N/A		5,43	1,51
	1346	Salad	5,48	5,41	5,45	-0,06			#N/A		#N/A	
	1390	Sliced links	4,84	4,78	4,81	-0,06			#N/A		#N/A	
	1392	Green beans	5,00	4,99	4,99	-0,01			#N/A		#N/A	
	1393	Sliced links	4,84	4,86	4,85	0,02			#N/A		#N/A	
	1394	Broccoli	4,96	4,90	4,93	-0,07			#N/A		#N/A	
	631	Frozen vegetables mix	0,00		#N/A			0,00	#N/A		0,00	0,00
	1276	Frozen vegetables mix	6,18		#N/A			6,18	#N/A		6,18	0,00
	1348	Sliced courgette	2,70		#N/A		2,00		2,35	-0,70	#N/A	
	1349	Frozen vegetables mix	2,70	2,85	2,77	0,15			#N/A		#N/A	
	1391	Frozen spinach with cream	5,79	5,89	5,84	0,10			#N/A		#N/A	
	2120	**Frozen ratatouille**	2,62	2,48	2,55	-0,15			#N/A		#N/A	
	2183	**Frozen links quiche**	4,83	4,58	4,70	-0,25			#N/A		#N/A	
	2367	**Frozen tomato and pepper pie**	4,43	5,43	4,93	1,00			#N/A		#N/A	
	593	Deli salad (piémontaise)	1,60	1,70	1,65	0,10			#N/A		#N/A	
	844	Grated carrots	2,26	1,60	1,93	-0,65			#N/A		#N/A	
	845	Deli salad (celery)	4,38	4,34	4,36	-0,04			#N/A		#N/A	
	1278	Cooked cabbage	1,90	2,23	2,07	0,33			#N/A		#N/A	
	1279	Deli salad (leeks)	6,18		#N/A			6,18	#N/A		6,18	0,00
	1347	Salad (vegetables mix)	6,05	6,00	6,02	-0,05			#N/A		#N/A	
	2058	**Ratatouille**	2,18	1,60	1,89	-0,57			#N/A		#N/A	
	2060	**Cooked sliced carrots**	2,64	3,30	2,97	0,66			#N/A		#N/A	
	2121	**Salad (bulghur and vegetables)**	3,97	3,96	3,96	-0,01			#N/A		#N/A	
	2123	**Oriental tabouleh**	2,18		#N/A		1,00		1,59	-1,18	#N/A	
	2148	**Cooked rice (tuna and basil)**	3,82	3,04	3,43	-0,78			#N/A		#N/A	
	2149	**Vegetables quiche**	3,15	3,15	3,15	0,00			#N/A		#N/A	
	2363	**Carrots celery salad**	2,66	2,49	2,58	-0,17			#N/A		#N/A	
	2365	**Mixed vegetables**	2,11	1,70	1,91	-0,41			#N/A		#N/A	
	2366	**Mixed vegetables**	4,57	4,23	4,40	-0,34			#N/A		#N/A	
	2483	**Salad (Piémontaise)**	4,00	3,74	3,87	-0,26			#N/A		#N/A	
Average category 4						**-0,06**						
Standard deviation of differences category 4						**0,38**						

Category	N° sample	Product	Log cfu/g		Average	Difference	Alternative method		Average <4 CFU/plate	Difference <4 CFU/plate	Average corrected values	Difference Corrected values
			Reference method	Alternative method			<4 CFU/plate	<or> threshold corrected values				
5	728	Liquid egg product	6,08	5,92	6,00	-0,16			#N/A		#N/A	
	827	Liquid egg product	2,23	2,38	2,31	0,15			#N/A		#N/A	
	1137	Liquid egg product	4,18	4,18	4,18	0,00			#N/A		#N/A	
	1138	Scrambled eggs	4,34	4,00	4,17	-0,34			#N/A		#N/A	
	1139	Liquid egg product	4,62	4,46	4,54	-0,16			#N/A		#N/A	
	1140	Liquid egg product	4,23	4,11	4,17	-0,12			#N/A		#N/A	
	588	Meringue	1,81	2,08	1,95	0,27			#N/A		#N/A	
	1144	Egg based dessert	2,18		#N/A		2,00		2,09	-0,18	#N/A	
	1292	Pancakes	2,04	1,95	2,00	-0,09			#N/A		#N/A	
	1293	Pancakes	1,85	2,00	1,92	0,15			#N/A		#N/A	
	6278	Quiche Lorraine	1,30		#N/A			0,00	#N/A		0,65	-1,30
	6730	Mayonnaise	3,85	3,79	3,82	-0,06			#N/A		#N/A	
	6731	Tortilla with onions	4,88	4,76	4,82	-0,11			#N/A		#N/A	
	587	Pastry	1,85	1,90	1,87	0,06			#N/A		#N/A	
	1141	Pastry	4,41	4,32	4,37	-0,09			#N/A		#N/A	
	1142	Pastry	4,43	4,34	4,39	-0,09			#N/A		#N/A	
	1291	Pastry	4,00	3,26	3,63	-0,74			#N/A		#N/A	
	2062	**Cocktail pie**	2,58	2,28	2,43	-0,30			#N/A		#N/A	
	2063	**Cocktail pie**	3,48	3,11	3,30	-0,36			#N/A		#N/A	
	2064	**Strawberries pie**	4,53	4,41	4,47	-0,12			#N/A		#N/A	
	6171	Pastry	2,08	2,08	2,08	0,00			#N/A		#N/A	
	6281	Pastry	1,85		#N/A			0,00	#N/A		0,92	-1,85
	6282	Pastry	2,08	2,08	2,08	0,00			#N/A		#N/A	
Average category 5						**-0,11**						
Standard deviation of differences category 5						**0,22**						
Average all categories				Dall		**-0,17**						
Standard deviation of differences all categories				SDAll		**0,42**						

	n all	136						
β=95%	T (0,05;70)=	1,98						
		0,84	Upper limit	Lower limit	Linear			
	Average (minimal value)	**0,00**	0,67	-1,01	-0,17			
	Average (maximal value)	**10,00**	0,67	-1,01	-0,17			
Category		n	T (0,05;70)=	SD	ISO formula	Bias	Lower limit (95%)	Upper limit (95%)
1		41	2,02	0,43	0,88	-0,28	-1,16	0,60
2		17	2,12	0,67	1,46	-0,29	-1,75	1,18
3		33	2,04	0,35	0,73	-0,08	-0,81	0,64
4		24	2,07	0,38	0,80	-0,06	-0,87	0,74
5		20	2,09	0,22	0,47	-0,11	-0,58	0,36
All categories		135	1,98	0,42	0,84	-0,17	-1,01	0,67

Appendix 6 - Accuracy profile study: raw data

Matrix	Strain	Level	Sample N°	ISO 4832♦				CHROMID® coli (COLI ID-F) for the enumeration of coliforms			
				Dilution	cfu/plate	cfu/g (rounded)	log cfu/g	Dilution	cfu/plate	cfu/g (rounded)	log cfu/g
Ground beef Batch 1 Aerobic mesophilic flora: $2,1.10^4$	*Klebsiella oxytoca* 42	1	7468	10	19	190	2,28	10	17	160	2,20
				100	2			100	1		
			7469	10	28	280	2,45	10	28	260	2,41
				100	3			100	1		
			7470	10	27	270	2,43	10	17	160	2,20
				100	3			100	1		
			7471	10	21	210	2,32	10	21	200	2,30
				100	2			100	1		
			7472	10	30	290	2,46	10	12	140	2,15
				100	2			100	3		
		2	7473	100	34	3600	3,56	100	25	2500	3,40
				1000	6			1000	2		
			7474	100	44	4400	3,64	100	43	4100	3,61
				1000	4			1000	2		
			7475	100	42	4100	3,61	100	32	3100	3,49
				1000	3			1000	2		
			7476	100	46	4500	3,65	100	38	3600	3,56
				1000	3			1000	2		
			7477	100	48	4800	3,68	100	29	2800	3,45
				1000	5			1000	2		
		3	7478	1000	77	75000	4,88	1000	88	91000	4,96
				10000	6			10000	12		
			7479	1000	73	73000	4,86	1000	67	62000	4,79
				10000	7			10000	1		
			7480	1000	64	70000	4,85	1000	87	84000	4,92
				10000	13			10000	5		
			7481	1000	77	78000	4,89	1000	88	87000	4,94
				10000	9			10000	8		
			7482	1000	78	79000	4,90	1000	77	78000	4,89
				10000	9			10000	9		
Ground beef Batch 2 Aerobic mesophilic flora: $3,8.10^3$ CFU/g	*Klebsiella oxytoca* 42	1	7483	10	21	200	2,30	10	23	240	2,38
				100	1			100	3		
			7484	10	12	130	2,11	10	27	260	2,41
				100	2			100	2		
			7485	10	29	290	2,46	10	25	250	2,40
				100	3			100	2		
			7486	10	11	120	2,08	10	39	360	2,56
				100	2			100	1		
			7487	10	21	210	2,32	10	20	200	2,30
				100	2			100	2		
		2	7488	100	20	2200	3,34	100	25	2500	3,40
				1000	4			1000	2		
			7489	100	37	3500	3,54	100	39	3700	3,57
				1000	2			1000	2		
			7490	100	43	4200	3,62	100	31	3000	3,48
				1000	3			1000	2		
			7491	100	30	3100	3,49	100	40	4000	3,60
				1000	4			1000	4		
			7492	100	38	3700	3,57	100	27	2600	3,41
				1000	3			1000	2		
		3	7493	1000	66	66000	4,82	1000	54	51000	4,71
				10000	7			10000	2		
			7494	1000	73	70000	4,85	1000	73	69000	4,84
				10000	4			10000	3		
			7495	1000	61	61000	4,79	1000	87	82000	4,91
				10000	6			10000	3		
			7496	1000	80	78000	4,89	1000	57	56000	4,75
				10000	6			10000	5		
			7497	1000	71	74000	4,87	1000	65	64000	4,81
				10000	10			10000	5		

♦ Analyses performed according to the COFRAC accreditation

Matrix	Strain	Level	Sample N°	ISO 4832♦				CHROMID® coli (COLI ID-F) for the enumeration of coliforms			
				Dilution	cfu/plate	cfu/g	log cfu/g	Dilution	cfu/plate	cfu/g	log cfu/g
Dairy dessert Batch 1 Aerobic mesophilic flora: 10 CFU/g	*Enterobacter agglomerans* 74	1	6641	10	32	330	2,52	10	22	210	2,32
				100	4			100	1		
			6642	10	37	380	2,58	10	31	310	2,49
				100	5			100	3		
			6643	10	23	240	2,38	10	35	330	2,52
				100	3			100	1		
			6644	10	39	370	2,57	10	24	220	2,34
				100	2			100	0		
			6645	10	35	360	2,56	10	21	250	2,40
				100	4			100	6		
		2	6646	100	49	5400	3,73	100	39	4000	3,60
				1000	10			1000	5		
			6647	100	47	5100	3,71	100	27	2800	3,45
				1000	9			1000	4		
			6648	100	42	4500	3,65	100	45	4200	3,62
				1000	7			1000	1		
			6649	100	48	5300	3,72	100	35	3500	3,54
				1000	10			1000	4		
			6650	100	63	6800	3,83	100	52	5200	3,72
				1000	12			1000	5		
		3	6651	1000	106	110000	5,04	1000	86	85000	4,93
				10000	16			10000	7		
			6652	1000	101	100000	5,00	1000	95	95000	4,98
				10000	11			10000	10		
			6653	1000	103	110000	5,04	1000	74	75000	4,88
				10000	16			10000	9		
			6654	1000	103	100000	5,00	1000	75	74000	4,87
				10000	7			10000	6		
			6655	1000	119	120000	5,08	1000	97	93000	4,97
				10000	17			10000	5		
Dairy dessert Batch 2 Aerobic mesophilic flora: 10 CFU/g	*Enterobacter agglomerans* 74	1	6656	10	14	150	2,18	10	18	160	2,20
				100	2			100	0		
			6657	10	35	350	2,54	10	29	260	2,41
				100	3			100	0		
			6658	10	45	460	2,66	10	23	230	2,36
				100	6			100	2		
			6659	10	29	310	2,49	10	34	340	2,53
				100	5			100	3		
			6660	10	44	470	2,67	10	30	280	2,45
				100	8			100	1		
		2	6661	100	61	6000	3,78	100	47	4500	3,65
				1000	5			1000	2		
			6662	100	60	5900	3,77	100	41	4500	3,65
				1000	5			1000	8		
			6663	100	65	6200	3,79	100	48	4500	3,65
				1000	3			1000	2		
			6664	100	62	6100	3,79	100	38	4000	3,60
				1000	5			1000	6		
			6665	100	65	6800	3,83	100	33	3300	3,52
				1000	10			1000	3		
		3	6666	1000	126	130000	5,11	1000	95	100000	5,00
				10000	12			10000	16		
			6667	1000	108	110000	5,04	1000	101	96000	4,98
				10000	9			10000	5		
			6668	1000	103	110000	5,04	1000	92	91000	4,96
				10000	19			10000	8		
			6669	1000	118	120000	5,08	1000	104	110000	5,04
				10000	17			10000	12		
			6670	10000	10	100000	5,00	1000	96	95000	4,98
				100000	1			10000	8		

♦ Analyses performed according to the COFRAC accreditation

Matrix	Strain	Level	Sample N°	ISO 4832♦				CHROMID® coli (COLI ID-F) for the enumeration of coliforms			
				Dilution	cfu/plate	cfu/g	log cfu/g	Dilution	cfu/plate	cfu/g	log cfu/g
Raw fish Batch 1 Aerobic mesophilic flora: 1,4.10³ CFU/g	*Enterobacter cloacae* Ad230	1	6817	10	32	310	2,49	10	19	220	2,34
				100	2			100	5		
			6818	10	38	370	2,57	10	21	230	2,36
				100	3			100	4		
			6819	10	26	270	2,43	10	32	310	2,49
				100	4			100	2		
			6820	10	28	270	2,43	10	22	220	2,34
				100	2			100	2		
			6821	10	24	240	2,38	10	14	160	2,20
				100	2			100	3		
		2	6822	100	29	3500	3,54	100	32	3100	3,49
				1000	9			1000	2		
			6823	100	41	4100	3,61	100	35	3400	3,53
				1000	4			1000	2		
			6824	100	59	5600	3,75	100	43	4300	3,63
				1000	3			1000	4		
			6825	100	47	4700	3,67	100	28	2900	3,46
				1000	5			1000	4		
			6826	100	37	3600	3,56	100	35	3600	3,56
				1000	3			1000	5		
		3	6827	1000	73	78000	4,89	1000	69	68000	4,83
				10000	13			10000	6		
			6828	1000	112	120000	5,08	1000	81	78000	4,89
				10000	21			10000	5		
			6829	1000	61	61000	4,79	1000	59	58000	4,76
				10000	6			10000	5		
			6830	1000	104	100000	5,00	1000	87	86000	4,93
				10000	10			10000	8		
			6831	1000	74	75000	4,88	1000	68	71000	4,85
				10000	9			10000	10		
Raw fish Batch 2 Aerobic mesophilic flora: 2,4.10³ CFU/g	*Enterobacter cloacae* Ad230	1	6832	10	30	280	2,45	10	30	340	2,53
				100	1			100	7		
			6833	10	27	260	2,41	10	29	260	2,41
				100	1			100	0		
			6834	10	21	200	2,30	10	25	260	2,41
				100	1			100	3		
			6835	10	25	260	2,41	10	26	240	2,38
				100	3			100	0		
			6836	10	28	280	2,45	10	19	190	2,28
				100	3			100	2		
		2	6837	100	39	3700	3,57	100	44	4500	3,65
				1000	2			1000	6		
			6838	100	43	4200	3,62	100	42	4000	3,60
				1000	3			1000	2		
			6839	100	44	4500	3,65	100	48	4300	3,63
				1000	5			1000	4		
			6840	100	44	4200	3,62	100	33	3300	3,52
				1000	2			1000	3		
			6841	100	49	4700	3,67	100	23	2400	3,38
				1000	3			1000	3		
		3	6842	1000	80	82000	4,91	1000	86	83000	4,92
				10000	10			10000	5		
			6843	1000	93	93000	4,97	1000	61	64000	4,81
				10000	9			10000	9		
			6844	1000	74	75000	4,88	1000	78	75000	4,88
				10000	8			10000	5		
			6845	1000	100	96000	4,98	1000	76	74000	4,87
				10000	6			10000	5		
			6846	1000	82	84000	4,92	1000	64	66000	4,82
				10000	10			10000	9		

♦ Analyses performed according to the COFRAC accreditation

Matrix	Strain	Level	Sample N°	ISO 4832♦				CHROMID® coli (COLI ID-F) for the enumeration of coliforms			
				Dilution	cfu/plate	cfu/g	log cfu/g	Dilution	cfu/plate	cfu/g	log cfu/g
Grated carrots Batch 1 Aerobic mesophilic flora: 8,0.10⁴ CFU/g	*Escherichia coli* 19	1	6536	10	38	360	2,56	10	26	250	2,40
				100	1			100	1		
			6537	10	21	220	2,34	10	30	280	2,45
				100	3			100	1		
			6538	10	33	300	2,48	10	21	190	2,28
				100	0			100	0		
			6539	10	45	440	2,64	10	40	360	2,56
				100	3			100	0		
			6540	10	29	290	2,46	10	36	340	2,53
				100	3			100	1		
		2	6541	100	46	4600	3,66	100	34	3500	3,54
				1000	5			1000	4		
			6542	100	48	4600	3,66	100	38	3600	3,56
				1000	3			1000	2		
			6543	100	41	4500	3,65	100	37	3500	3,54
				1000	9			1000	2		
			6544	100	55	5500	3,74	100	56	5600	3,75
				1000	5			1000	6		
			6545	100	53	5400	3,73	100	37	3900	3,59
				1000	6			1000	6		
		3	6546	1000	71	72000	4,86	1000	67	65000	4,81
				10000	8			10000	4		
			6547	1000	54	60000	4,78	1000	52	51000	4,71
				10000	12			10000	4		
			6548	1000	67	70000	4,85	1000	68	67000	4,83
				10000	10			10000	6		
			6549	1000	87	86000	4,93	1000	82	80000	4,90
				10000	8			10000	6		
			6550	1000	84	82000	4,91	1000	68	67000	4,83
				10000	6			10000	6		
Grated carrots Batch 2 Aerobic mesophilic flora: 800 CFU/g	*Escherichia coli* 19	1	6551	10	41	430	2,63	10	28	260	2,41
				100	6			100	0		
			6552	10	34	360	2,56	10	40	390	2,59
				100	5			100	3		
			6553	10	29	270	2,43	10	34	330	2,52
				100	1			100	2		
			6554	10	25	260	2,41	10	30	290	2,46
				100	4			100	2		
			6555	10	44	470	2,67	10	33	310	2,49
				100	8			100	1		
		2	6556	100	39	4100	3,61	100	54	5500	3,74
				1000	6			1000	7		
			6557	100	41	4300	3,63	100	53	5400	3,73
				1000	6			1000	6		
			6558	100	47	4600	3,66	100	44	4300	3,63
				1000	4			1000	3		
			6559	100	39	3700	3,57	100	26	2800	3,45
				1000	2			1000	5		
			6560	100	57	5800	3,76	100	45	4200	3,62
				1000	7			1000	1		
		3	6561	1000	86	86000	4,93	1000	80	79000	4,90
				10000	9			10000	7		
			6562	1000	75	74000	4,87	1000	77	71000	4,85
				10000	6			10000	1		
			6563	1000	80	81000	4,91	1000	82	80000	4,90
				10000	9			10000	6		
			6564	1000	51	50000	4,70	1000	50	47000	4,67
				10000	4			10000	2		
			6565	1000	91	91000	4,96	1000	61	58000	4,76
				10000	9			10000	3		

♦ Analyses performed according to the COFRAC accreditation

Matrix	Strain	Level	Sample N°	ISO 4832♦				CHROMID® coli (COLI ID-F) for the enumeration of coliforms			
				Dilution	cfu/plate	cfu/g	log cfu/g	Dilution	cfu/plate	cfu/g	log cfu/g
Liquid egg product Batch 1 Aerobic mesophilic flora: 10 CFU/g	*Cronobacter sakazakii* Ad890	1	6017	10	16	160	2,20	10	13	140	2,15
				100	2			100	2		
			6018	10	18	170	2,23	10	30	310	2,49
				100	1			100	4		
			6019	10	16	180	2,26	10	30	280	2,45
				100	4			100	1		
			6020	10	30	300	2,48	10	25	280	2,45
				100	3			100	6		
			6021	10	23	250	2,40	10	32	310	2,49
				100	4			100	2		
		2	6022	100	20	2000	3,30	100	39	3600	3,56
				1000	2			1000	1		
			6023	100	25	2500	3,40	100	49	4500	3,65
				1000	3			1000	1		
			6024	100	31	3200	3,51	100	28	2700	3,43
				1000	4			1000	2		
			6025	100	41	3900	3,59	100	50	4700	3,67
				1000	2			1000	2		
			6026	100	39	3600	3,56	100	35	3600	3,56
				1000	1			1000	5		
		3	6027	1000	20	19000	4,28	1000	20	18000	4,26
				10000	1			10000	0		
			6028	1000	67	65000	4,81	1000	79	74000	4,87
				10000	4			10000	2		
			6029	1000	63	64000	4,81	1000	54	55000	4,74
				10000	7			10000	7		
			6030	1000	76	71000	4,85	1000	75	77000	4,89
				10000	2			10000	10		
			6031	1000	66	68000	4,83	1000	78	79000	4,90
				10000	9			10000	9		
Liquid egg product Batch 2 Aerobic mesophilic flora: <10 CFU/g	*Cronobacter sakazakii* Ad890	1	6032	10	24	260	2,41	10	21	210	2,32
				100	4			100	2		
			6033	10	34	350	2,54	10	30	300	2,48
				100	4			100	3		
			6034	10	26	250	2,40	10	30	330	2,52
				100	1			100	6		
			6035	10	23	250	2,40	10	33	310	2,49
				100	4			100	1		
			6036	10	23	230	2,36	10	28	280	2,45
				100	2			100	3		
		2	6037	100	15	1500	3,18	100	27	2600	3,41
				1000	1			1000	2		
			6038	100	28	2600	3,41	100	25	2500	3,40
				1000	1			1000	2		
			6039	100	38	3500	3,54	100	38	4100	3,61
				1000	1			1000	7		
			6040	100	37	3700	3,57	100	34	3200	3,51
				1000	4			1000	1		
			6041	100	43	4500	3,65	100	35	3700	3,57
				1000	6			1000	6		
		3	6042	1000	31	32000	4,51	1000	45	43000	4,63
				10000	4			10000	2		
			6043	1000	65	62000	4,79	1000	44	43000	4,63
				10000	3			10000	3		
			6044	1000	47	48000	4,68	1000	90	87000	4,94
				10000	6			10000	6		
			6045	1000	50	46000	4,66	1000	65	69000	4,84
				10000	1			10000	11		
			6046	1000	53	52000	4,72	1000	91	89000	4,95
				10000	4			10000	7		

♦ Analyses performed according to the COFRAC accreditation

Appendix 7 - Accuracy profile study: summarized results

(Food) Category 1	Meat products and meat
(Food) Type 1	Ground beef

			Reference method result					Alternative method result				
Sample Name	(Food) item	Level	rep 1	rep 2	rep 3	rep 4	rep 5	rep 1	rep 2	rep 3	rep 4	rep 5
7468-7472	Ground beef	1	190	280	270	210	290	160	260	160	200	140
7483-7487	Ground beef	1	200	130	290	120	210	240	260	250	360	200
7473-7477	Ground beef	2	3600	4400	4100	4500	4800	2500	4100	3100	3600	2800
7488-7492	Ground beef	2	2200	3500	4200	3100	3700	2500	3700	3000	4000	2600
7478-7482	Ground beef	3	75000	73000	70000	78000	79000	91000	62000	84000	87000	78000
7493-7497	Ground beef	3	66000	70000	61000	78000	74000	51000	69000	82000	56000	64000

(Food) Category 2	Milk and dairy products
(Food) Type 2	Dairy dessert

			Reference method result					Alternative method result				
Sample Name	(Food) item	Level	rep 1	rep 2	rep 3	rep 4	rep 5	rep 1	rep 2	rep 3	rep 4	rep 5
6641-6645	Dairy dessert	1	330	380	240	370	360	210	310	330	220	250
6656-6660	Dairy dessert	1	150	350	460	310	470	160	260	230	340	280
6646-6650	Dairy dessert	2	5400	5100	4500	5300	6800	4000	2800	4200	3500	5200
6661-6665	Dairy dessert	2	6000	5900	6200	6100	6800	4500	4500	4500	4000	3300
6651-6655	Dairy dessert	3	110000	100000	110000	100000	120000	85000	95000	75000	74000	93000
6666-6670	Dairy dessert	3	130000	110000	110000	120000	100000	100000	96000	91000	110000	95000

(Food) Category 3	Seafood products
(Food) Type 3	Raw fish

			Reference method result					Alternative method result				
Sample Name	(Food) item	Level	rep 1	rep 2	rep 3	rep 4	rep 5	rep 1	rep 2	rep 3	rep 4	rep 5
6817-6821	Raw fish	1	310	370	270	270	240	220	230	310	220	160
6832-6836	Raw fish	1	280	260	200	260	280	340	260	260	240	190
6822-6826	Raw fish	2	3500	4100	5600	4700	3600	3100	3400	4300	2900	3600
6837-6841	Raw fish	2	3700	4200	4500	4200	4700	4500	4000	4300	3300	2400
6827-6831	Raw fish	3	78000	120000	61000	100000	75000	68000	78000	58000	86000	71000
6842-6846	Raw fish	3	82000	93000	75000	96000	84000	83000	64000	75000	74000	66000

(Food) Category 4	Vegetables
(Food) Type 4	Grated carrots

			Reference method result					Alternative method result				
Sample Name	(Food) item	Level	rep 1	rep 2	rep 3	rep 4	rep 5	rep 1	rep 2	rep 3	rep 4	rep 5
6536-6640	Grated carrots	1	360	220	300	440	290	250	280	190	360	340
6551-6555	Grated carrots	1	430	360	270	260	470	260	390	330	290	310
6541-6545	Grated carrots	2	4600	4600	4500	5500	5400	3500	3600	3500	5600	3900
6556-6560	Grated carrots	2	4100	4300	4600	3700	5800	5500	5400	4300	2800	4200
6546-6550	Grated carrots	3	72000	60000	70000	86000	82000	65000	51000	67000	80000	67000
6561-6565	Grated carrots	3	86000	74000	81000	50000	91000	79000	71000	80000	47000	58000

(Food) Category 5	Eggs and Egg based products
(Food) Type 5	Eggs (Liquid egg product)

			Reference method result					Alternative method result				
Sample Name	(Food) item	Level	rep 1	rep 2	rep 3	rep 4	rep 5	rep 1	rep 2	rep 3	rep 4	rep 5
6017-6021	Liquid egg product	1	160	170	180	300	250	140	310	280	280	310
6032-6036	Liquid egg product	1	260	350	250	250	230	210	300	330	310	280
6022-6026	Liquid egg product	2	2000	2500	3200	3900	3600	3600	4500	2700	4700	3600
6037-6041	Liquid egg product	2	1500	2600	3500	3700	4500	2600	2500	4100	3200	3700
6027-6031	Liquid egg product	3	19000	65000	64000	71000	68000	18000	74000	55000	77000	79000
6042+6046	Liquid egg product	3	32000	62000	48000	46000	52000	43000	43000	87000	69000	89000

Appendix 8 – Inclusivity / Exclusivity: raw data

INCLUSIVITY											
Year of testing	N°	Strain		Reference	Origin	PCA	ISO 4832♦	BLBVB	CHROMID Coli	
						CFU/plate (1 ml -7)	CFU/plate (1ml -7)		CFU/plate (1 ml -7)	Description of the colonies
2006	1	*Citrobacter*	*diversus*	Adria 140	Raw milk	44	16	/	28	blue
						42	17		33	
	2	*Citrobacter*	*diversus*	Adria 38	Food	28	11	/	10	grey-blue
						36	10		8	
	3	*Citrobacter*	*diversus*	CIP 8294	Unknowm	30	33	/	55	clear bue
						42	34		51	
	4	*Citrobacter*	*freundii*	Adria 23	Sausage	18	8	/	24	blue
						38	12		24	
	5	*Citrobacter*	*freundii*	Adria 24	Saefood cocktail	56	46	/	8	blue
						57	52		9	
	6	*Citrobacter*	*freundii*	CIP 5732	Unknowm	40	23	/	11	blue
						34	18		16	
	7	*Citrobacter*	*koseri*	CIP 8297	Unknowm	25	5	/	1	blue
						25	1		0	
	8	*Hafnia*	*alvei*	Adria 84	Pizza	66	67	/	35	grey-blue
						65	48		25	
	9	*Hafnia*	*alvei*	Adria 124	Maet product	36	33	/	16	grey-blue
						53	36		18	
	10	*Hafnia*	*alvei*	Adria 50	Mechanically deboned meat	19	24	/	12	grey-blue
						24	24		15	
	11	*Enterobacter*	*aerogenes*	ATCC 13048	Unknowm	51	34	/	22	clear bue
						37	31		18	
	12	*Enterobacter*	*aerogenes*	CIP 103659	Unknowm	103	89	/	31	grey-blue
						126	109		29	
	13	*Enterobacter*	*agglomerans*	Adria 11	Cheese	23	15	/	20	grey-blue
						16	13		12	
	14	*Enterobacter*	*amnigenus*	Adria 45	Ris de veau	62	23	/	5	blue
						58	26		2	
	15	*Enterobacter*	*cloacae*	Adria 10	Raw milk	6	19	/	11	grey-blue
						4	9		7	
	16	*Enterobacter*	*cloacae*	Adria 128	Ground beef	26	35	/	10	blue
						35	42		12	
	17	*Enterobacter*	*cloacae*	Fb2	Food	30	38	/	31	blue
						25	46		34	
	18	*Enterobacter*	*cloacae*	Fb3	Food	19	17	/	16	blue
						20	21		10	
	19	*Enterobacter*	*intermedius*	Adria 60	Beans	32	19 µcol<0,5mm	/	10	grey-blue
						18	23 µcol<0,5mm		17	
	20	*Enterobacter*	*sakazakii*	Adria D7	Poultry meat	64	51	/	55	grey-blue
						43	47		56	
	21	*Hafnia alvei*	*alvei*	Adria 130	Dairy product	20	29 µcol<0,5mm	/	5	blue
						29	26 µcol<0,5mm		7	
	22	*Escherichia*	*vulneris*	Adria 127	Raw milk	72	20	/	27	blue
						62	17		25	
	23	*Hafnia alvei*	*alvei*	Adria 168	Duck meat	70	16	/	2	clear grey
						72	12		2	
	24	*Klebsiella*	*oxytoca*	Adria42	Food	31	42 µcol<0,5mm	/	11	blue
						38	42 µcol<0,5mm		8	
	25	*Klebsiella*	*oxytoca*	Adria57	Food	31	46	/	34	blue
						33	37		40	

♦ Analyses performed according to the COFRAC accreditation

INCLUSIVITY										
Year of testing	N°	Strain		Reference	Origin	PCA	ISO 4832♦	BLBVB	CHROMID Coli	
						CFU/plate (1 ml -7)	CFU/plate (1ml -7)		CFU/plate (1 ml -7)	Description of the colonies
2006	26	*Klebsiella*	*pneumoniae*	Adria28	Food	67	58	/	72	blue
						50	58		60	
	27	*Klebsiella*	*pneumoniae*	CIP 8291	Unknown	100	8	/	9	grey-blue
						90	11		0	
	28	*Escherichia*	*coli*	A00C70	Poultry meat	24	30	/	10	pink
						32	31		4	
	29	*Serratia*	*liquefaciens*	Adria 8	Egg product	>300	86	/	55	grey-blue
						>300	96		71	
	30	*Klebsiella*	*pneumoniae*	CIP 52145	Sweetbread	49	30	/	41	blue
						53	31		33	
2017	**34**	*Citrobacter*	*braakii*	Ad2701	Squids	14	10	/	12	blue
	35	*Citrobacter*	*koseri*	Ad2731	Sprouts	82	78	/	91	blue
	36	*Citrobacter*	*farmeri*	Ad1116	Environmental sample (egg industry)	98	103	/	116	blue
	37	*Enterobacter*	*aerogenes*	Ad2569	Cheese	47	60	/	53	blue
	38	*Enterobacter*	*hormaechei*	Ad1373	Water	133	120	/	119	blue
	39	*Enterobacter*	*kobei*	Ad706	Milk powder	68	68	/	79	blue
	40	*Enterobacter*	*helveticus*	DSM18396	Unknown	70	27	+/-	22	grey
	41	*Escherichia*	*fergusonii*	Ad1381	Water	70	74	-	78	white
	42	*Escherichia*	*hermanii*	Ad464	Raw milk	130	128	-	136	pale
	43	*Klebsiella*	*oxytoca*	Ad1453	Swimming pool water	22	20	/	18	blue
	44	*Klebsiella*	*pneunomiae*	Ad1594	Swimming pool water	20	25	/	19	blue
	45	*Klebsiella*	*pneumoniae*	Ad1374	Water	98	107	/	75	blue
	46	*Klebsiella*	*oxytoca*	Ad1371	Water	14	11	/	21	blue
	47	*Serratia*	*liquefaciens*	Ad2601	Dairy product	25	22	/	29	white
	48	*Serratia*	*proteomaculans*	Ad1698	Salmon	67	29	/	118	beige
	49	*Serratia*	*marcescens*	Ad2604	Dairy product	52	66	/	53	white
	50	*Serratia*	*fonticola*	Ad1696	Salmon	25	23	/	14	beige

EXCLUSIVITY												
Year of testing	N°	Strain		Reference	Origin	PCA	ISO 4832♦		BLBVB	CHROMID Coli	
						CFU/ plate	CFU/ plate	Description of the colonies		CFU/ plate	Description of the colonies
2006	1	*Aeromonas*	*hydrophila*	CIP 5750	Unknown	16 (-7)	<1 (-7)	/	/	<1 (-7)	/
						28 (-7)	<1 (-7)			<1 (-7)	
	2	*Aeromonas*	*sobria*	CIP 7433	Fish	3 (-5)	<1 (-4)	/	/	<1 (-7)	/
						2 (-5)	<1 (-4)			<1 (-7)	
	3	*Bacillus*	*circulans*	ATCC 4313	Unknown	>300 (-5)	2 (-7)	col<0,5mm pink	/	<1 (-7)	/
						>300 (-5)	2 (-7)			<1 (-7)	
	4	*Bacillus*	*circulans*	Ad171	Vegetables	2 (-4)	<1 (-4)	/	/	<1 (-4)	/
						1 (-4)	<1 (-4)			<1 (-4)	
	5	*Bacillus*	*subtilis*	ATCC6633	Unknown	151 (-4)	<1 (-4)	/	/	<1 (-4)	/
						164 (-4)	<1 (-4)			<1 (-4)	
	6	*Edwarsiella*	*tarda*	CIP 78.61T	Unknown	12 (-7)	18 (-7)	col<0,5mm pink	/	4 (-7)	white
						11 (-7)	15 (-7)			1 (-7)	
	7	*Pectobacterium*	*carotovorum*	CIP 82.83T	Potatoes	1 (-7)	1 (-7)	col<0,5mm pink	/	<1 (-7)	/
						4 (-7)	<1 (-7)			<1 (-7)	
	8	*Lactobacillus*	*paracasei*	ATCC 10746	Unknown	7 (-7)	<1 (-7)	/	/	<1 (-7)	/
						8 (-7)	<1 (-7)			<1 (-7)	
	9	*Morganella*	*morganii*	CIP A236	Unknown	17 (-7)	25 (-7)	col<0,5mm pink	/	<1 (-7)	/
						29 (-7)	23 (-7)			<1 (-7)	
	10	*Proteus*	*mirabilis*	Adria 55	Food	40 (-6)	26 (-6)	Typical	/	18 (-6)	white
						56 (-6)	27 (-6)			21 (-6)	
	11	*Proteus*	*vulgaris*	Adria 56	Food	17 (-7)	21 (-7)	brown, pink	/	15 (-7)	white
						23 (-7)	13 (-7)			9 (-7)	
	12	*Providencia*	*rettgeri*	Adria 12	Egg white	21 (-7)	22 (-7)	col<0,5mm pink	/	<1 (-7)	/
						12 (-7)	16 (-7)			<1 (-7)	
	13	*Providencia*	*stuartii*	Adria 46	Turkey leg	18 (-7)	28 (-7)	col<0,5mm pink	/	<1 (-7)	/
						19 (-7)	25 (-7)			<1 (-7)	
	14	*Pseudomonas*	*aeruginosa*	ATCC 27853	Unknown	8 (-7)	<1 (-7)	/	/	<1 (-7)	/
						12 (-7)	<1 (-7)			<1 (-7)	
	15	*Pseudomonas*	*fluorescens*	CIP 5690	Unknown	6 (-7)	<1 (-7)	/	/	<1 (-7)	/
						2 (-7)	<1 (-7)			<1 (-7)	
	16	*Pseudomonas*	*putida*	Adria 11	Egg product	>300 (-4)	<1 (-4)	/	/	<1 (-4)	/
						>300 (-4)	<1 (-4)			<1 (-4)	
	17	*Salmonella*	*arizonae*	CIP 5523	Unknown	17 (-7)	23 (-7)	brown, pink	/	12 (-7)	grey
						33 (-7)	17 (-7)			11 (-7)	
	18	*Salmonella*	*Enteritidis*	Adria 2532	Ham	84 (-7)	59 (-7)	brown, pink	/	80 (-7)	white
						72 (-7)	69 (-7)			67 (-7)	
	19	*Salmonella*	*Typhimurium*	Adria 305	Paella	64 (-7)	43 (-7)	brown, pink	/	39 (-7)	white
						62 (-7	21 (-7)			27 (-7)	
	20	*Shigella*	*flexneri*	CIP 8248	Unknown	51 (-7)	25 (-7)	col<0,5mm purple	/	<1 (-7)	/
						33 (-7)	32 (-7)			<1 (-7)	
2017	21	*Buttiauxella*	*agrestis*	Ad1328	Egg product	11(-7)	18 (-7)	C	-	18 (-7)	beige
	22	*Kluyvera*	*ascorbata*	Ad229	Fish	28 (-7)	37 (-7)	C	+	43 (-7)	purple
	23	*Leclercia*	*adecarboxylata*	Ad707	Milk powder	26 (-7)	26 (-7)	C	+	25 (-7)	purple
	24	*Lelliottia*	*amnigena*	Ad1379	Water	76 (-7)	40 (-7)	C	-	<1 (-7)	white-blue
	25	*Pantoea*	*agglomerans*	A00L065	Cheese	95 (-7)	99 (-7)	C	+	93 (-7)	white-blue
	26	*Providencia*	*stuartii*	Ad1575	Water	77 (-7)	70 (-7)	NC (<0,5mm)	-	<1 (-7)	
	27	*Raoultella*	*terrigena*	Ad1370	Water	61 (-7)	59 (-7)	C	+	52 (-7)	purple
	28	*Proteus*	*vulgaris*	Ad984	Pork meat	54 (-7)	74 (-7)	NC (<0,5mm) pale	-	<1 (-7)	/
	29	*Proteus*	*mirabilis*	Ad639	Mayonnaise	108 (-7)	89 (-7)	NC (<0,5mm)	-	<1 (-7)	/
	30	*Yersinia*	*enterocolitica*	Ad1028	Pork (speck)	54 (-7)	49 (-7)	C	-	51	beige

♦ Analyses performed according to the COFRAC accreditation