

NF VALIDATION
Validation of alternative analytical methods
Application in food microbiology

Summary study report

Validation study according to the ISO 16140-2

CHROMID® Coli (COLI ID-F)

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

for the enumeration of coliforms in a broad range of food

Quantitative method

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This report consists of 62 pages, including 10 appendices.

Only copies including the totality of this report are authorised.

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

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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 carried out according to the ISO 16140-2:2016, ISO 16140-2/A1:2024 and the AFNOR technical rules (Revision 12).

Validation protocols	- ISO 16140-1:2016: Microbiology of the food chain - Method validation — <i>Part 1: Vocabulary</i> - ISO 16140-2:2016 & ISO 16140-2/A1:2024: Microbiology of the food chain - Method validation — <i>Part 2: Protocol for the validation of alternative (proprietary) methods against a reference method</i> - AFNOR technical rules (Revision 12)
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 food
Certification organism	AFNOR Certification (http://nf-validation.afnor.org/)

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

1 INTRODUCTION

The **CHROMID® Coli (COLI ID-F) for the enumeration of coliforms** was validated in 2006 according to the 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	Reference method	Validation standard	Conducted by
December 2006	Initial Validation for a broad range of food	ISO 4832:2006	ISO 16140:2003	ADRIA
2010	Renewal study	ISO 4832:2006	ISO 16140:2003	ADRIA
2014	Renewal study	ISO 4832:2006	ISO 6140:2003	ADRIA
2018	Renewal study including additional data to meet the requirements of ISO 16140-2:2016.	ISO 4832:2006	ISO 16140-2:2016	ADRIA
2022	Renewal study	ISO 4832:2006	ISO 16140-2:2016	ADRIA
2025	Extension study for a single pate interpretation and re-interpretation according to ISO 7218:2024 and ISO 16140-2/A1:2024	ISO 4832:2006	ISO 16140-2:2016 ISO 16140-2/A1:2024	ADRIA

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

2.1.3 Restrictions

There is no restriction for use.

2.2 Reference method♦

The reference method is the 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**.

In the initial study, in 2006, two plates and two replicates were inoculated per dilution for the reference method. In the renewal studies conducted in 2011 and 2018, only one plate and one replicate were inoculated per dilution.

For the extension performed in 2025, a reinterpretation of the results according to the ISO 7218:2024 was made by considering only the results of “replicate 1”, “plate a” for the samples analysed in 2006.

2.3 Protocols applied during the initial validation and the renewal study

> Incubation of the plates

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

> Interpretation

Initial and renewal studies were carried out with an enumeration using two plates. For the extension performed in 2025, the method comparison study data were reanalysed using only one plate, one dilution as follow:

- Only first replicate “replicate 1” was kept for samples tested in 2006. For one sample tested in 2006 (n°1349), first replicate was not interpretable, the replicate 2 was then chosen for interpretation.
- the first dilution with interpretable results was kept.

The dilution and replicate kept for one plate interpretation are highlighted in blue in the raw data table.

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

3 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 Relative trueness study

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 Number and nature of the samples

In previous studies, the experimental design was performed to meet the requirements of ISO 16140-2:2016.

Five food categories were tested with a minimum of 15 interpretable results per category and 5 interpretable results per type. The repartition per category and type is provided in Table 2.

177 samples were analysed, leading to 134 interpretable results for both interpretations (based on one and two plates).

Table 2 – Categories and types

Category		Type		CHROMID Coliforms		
				Analysed	Interpretable 22 h	
					2 plates	1 plate
1	Meat and meat products	a	Raw (unseasoned)	17	15	15
		b	Raw and cooked delicatessen	24	19	19
		c	RTE, RTRH	9	7	7
		Total		50	41	41
2	Milk and dairy products	a	Raw milk	7	6	6
		b	Cream, desserts and cheeses	14	6	6
		c	Milk powder	8	5	5
		Total		29	17	17
3	Seafood products	a	Raw fish	15	9	9
		b	Smoked and marinated	5	5	5
		c	RTE, RTRH	21	19	19
		Total		41	33	33
4	Vegetables	a	Raw vegetables	10	5	5
		b	Frozen	8	5	5
		c	RTE, RTRH	16	13	13
		Total		34	23	23
5	Eggs and egg-based products	a	Eggs	6	6	6
		b	Egg-based products	7	5	5
		c	Pastries	10	9	9
		Total		23	20	20
All categories				177	134	134

3.1.2 Artificial and natural contamination of the samples

Artificial contaminations were realized by spiking or seeding protocols. The inoculated strains, the contamination protocols, the injured protocols of the inoculated vegetative cells and the injury evaluation are provided in **Appendix 3**. Injury efficiency was evaluated by enumerating the pure culture on selective and non-selective agars.

50 samples were artificially contaminated using seeding protocols.

43 samples gave interpretable results by both methods. 91 samples giving interpretable results by both methods were naturally contaminated.

For both interpretations (using 1 or 2 plates) 67.9 % of the samples were naturally contaminated.

3.1.3 Raw data

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

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

The data are classified in four 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 are 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 log₁₀ units less than the observed value in case of a lower than value. Similarly, any value greater than the upper limit should be amended by adding 1 log₁₀ unit. These results are not included in the calculations but also appear on the graphs.
- Samples with no result (ND): results not determined as the size of the colonies does not enable enumeration or incoherence in the enumeration between the dilutions are observed.

Table 3 - Classification of the data

Category		Type		Number of samples analysed	CHROMID® Coliforms							
					22h							
					Number of samples with interpretable results by both methods		Number of samples with no results (ND)		Number of samples with less than 4 colonies/plate		Number of samples below or above the quantification limit	
		2 plates	1 plate	2 plates	1 plate	2 plates	1 plate	2 plates	1 plate			
1	Meat and meat products	a	Raw (unseasoned)	17	15	15	0	0	0	0	2	2
		b	Raw and cooked delicatessen	24	19	19	0	0	3	3	2	2
		c	RTE, RTRH	9	7	7	1	1	1	1	0	0
		Total		50	41	41	1	1	4	4	4	4
2	Milk and dairy products	a	Raw milk	7	6	6	0	0	0	0	1	1
		b	Cream, desserts and cheeses	14	6	6	0	0	0	0	8	8
		c	Milk powder	8	5	5	0	0	1	1	2	2
		Total		29	17	17	0	0	1	1	11	11
3	Seafood products	a	Raw fish	15	9	9	0	0	0	0	6	6
		b	Smoked and marinated	5	5	5	0	0	0	0	0	0
		c	RTE, RTRH	21	19	19	0	0	0	0	2	2
		Total		41	33	33	0	0	0	0	8	8
4	Vegetables	a	Raw vegetables	10	5	5	0	0	0	0	5	5
		b	Frozen	8	5	5	0	0	1	1	2	2
		c	RTE, RTRH	16	13	13	0	0	2	2	1	1
		Total		34	23	23	0	0	3	3	8	8
5	Eggs and egg-based products	a	Eggs	6	6	6	0	0	0	0	0	0
		b	Egg-based products	7	5	5	0	0	2	2	0	0
		c	Pastries	10	9	9	0	0	0	0	1	1
		Total		23	20	20	0	0	2	2	1	1
All categories				177	134	134	1	1	10	10	32	32

The samples, which were not used in the calculations, are provided in Table 4.
These samples are the same for one or two-plate interpretation.

Table 4 - Samples which were not used in the calculations

Sample No	Product	ISO	CHROMID Coliforms		Category	Type
			22 h			
			2 plates	1 plate		
594	Raw pork meat	1.65	<1.00	<1.00	1	a
1867	Colombo turkey skewer	>4.18	>4.18	>4.18	1	a
563	Ready to cook veal meal	1.48*	1.00*	1.00*	1	b
564	Ready to cook veal meal	<1.00	1.00*	1.00*	1	b
592	Sausage meat	2.18	1.48*	1.48*	1	b
634	Delicatessen sausage)	2.48*	2.00*	2.00*	1	b
1865	Frozen sausages	2.18	<1.00	<1.00	1	b
589	Tartar	1.81	1.48*	1.48*	1	c
642	Ready to heat meal	3.04	ND	ND	1	c
842	Raw milk	>5.18	3.92	3.92	2	a
847	Goat cheese	>6.18	>6.18	>6.18	2	b
848	Goat cheese	>5.18	>5.18	>5.18	2	b
1145	Cheese	2.30*	<2.00	<2.00	2	b
1146	Cheese (Raclette)	2.30*	<2.00	<2.00	2	b
1273	Strawberries ice cream	<1.00	1.30*	1.30*	2	b
1274	Pear ice cream	<1.00	<1.00	<1.00	2	b
6283	Raw milk cheese (Roquefort)	<1.00	<1.00	<1.00	2	b
6284	Raw milk cheese (Selles sur Cher)	>5.18	>5.18	>5.18	2	b
6297	Skimmed milk powder	<1.00	<1.00	<1.00	2	c
6298	Skimmed milk powder	1.48*	1.30*	1.30*	2	c
6299	Milk powder	1.30*	<1.00	<1.00	2	c
1652	Pilchards	1.00*	<1.00	<1.00	3	a
1653	Mackerel	<1.00	1.00*	1.00*	3	a
6402	Lobster	<1.00	<1.00	<1.00	3	a
6723	Fish fillet	>4.18	>4.18	>4.18	3	a
6724	Fish fillet	>5.18	4.23	4.23	3	a
6725	Fish	>6.18	4.60	4.56	3	a
6170	Cod fritters	<1.00	<1.00	<1.00	3	c
6280	Ready to reheat salmon	<1.00	<1.00	<1.00	3	c
627	Brussels sprouts	1.74	<1.00	<1.00	4	a
629	Green beans	1.30*	<1.00	<1.00	4	a
630	Courgette	<1.00	<1.00	<1.00	4	a
1275	Green beans	4.40	>5.18	>5.18	4	a
1277	Green pepper	4.61	>5.18	>5.18	4	a
631	Frozen vegetables mix	<1.00	<1.00	<1.00	4	b
1276	Frozen vegetables mix	>5.18	>5.18	>5.18	4	b
1348	Sliced courgette	2.66	2.00*	2.00*	4	b
593	Deli salad (piémontaise)	1.74	1.48*	1.48*	4	c
1279	Deli salad (leeks)	>5.18	>5.18	>5.18	4	c

Sample No	Product	ISO	CHROMID Coliforms		Category	Type
			22 h			
			2 plates	1 plate		
2123	Oriental tabouleh	2.18	1.00*	1.00*	4	c
1144	Egg based dessert	2.30*	2.00*	2.00*	5	b
6278	Quiche lorraine	1.30*	1.00*	1.00*	5	b
6281	Pastry	1.86	<1.00	<1.00	5	c

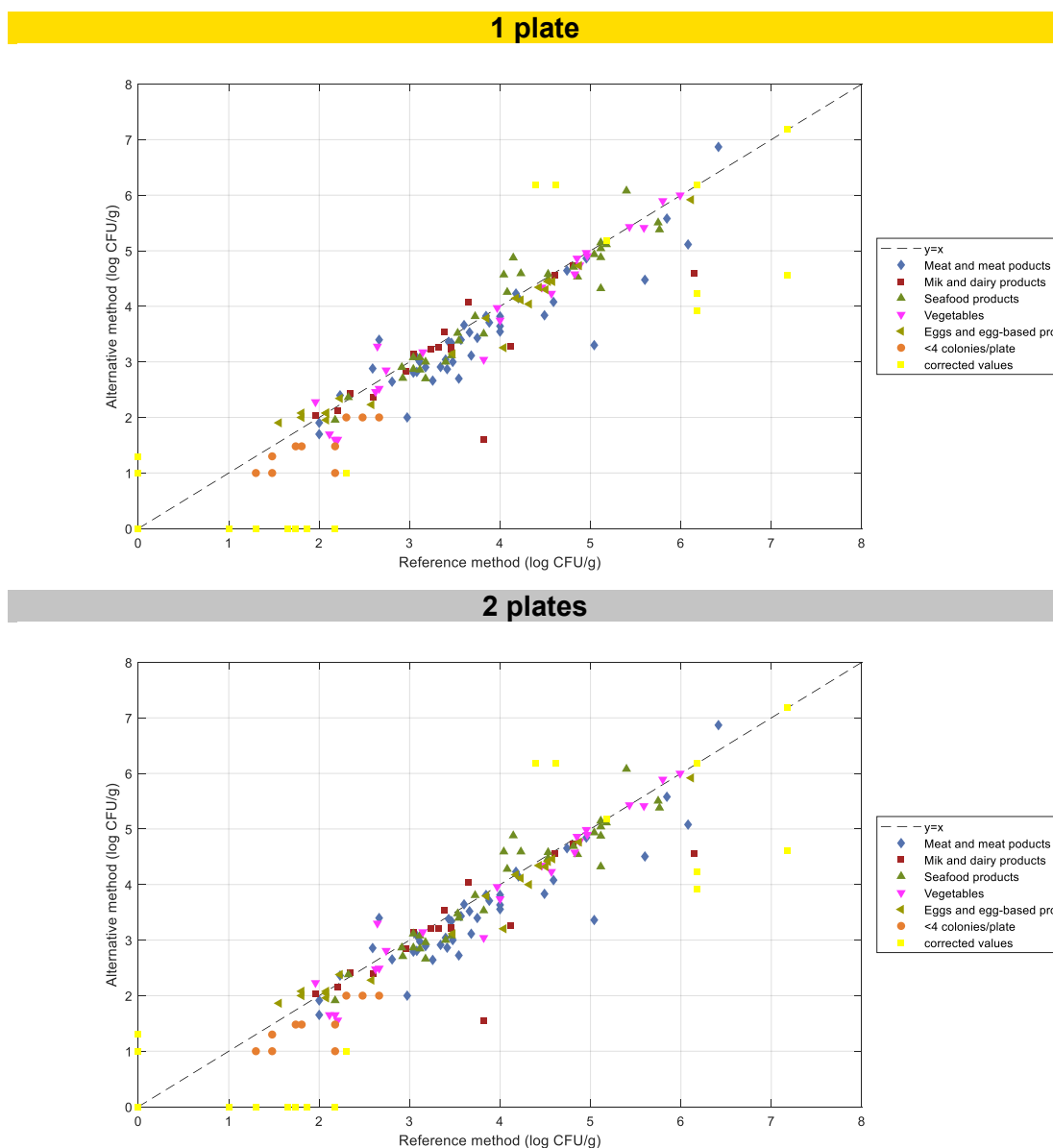
*: Results with less than 4 colonies per plate with the reference and/or the alternative method

3.1.4 Statistical interpretation

The obtained data were analysed using the scatter plot. The graphs are provided with the line of identity ($y = x$).

The data plotted for each individual category are given in **Appendix 5** and for all the products Figure 1.

Figure 1 - Data plotted for all the products



The calculated values for the Average difference and Standard deviation differences per category as well as the upper and lower 95% confidence limit are provided in Table 5.

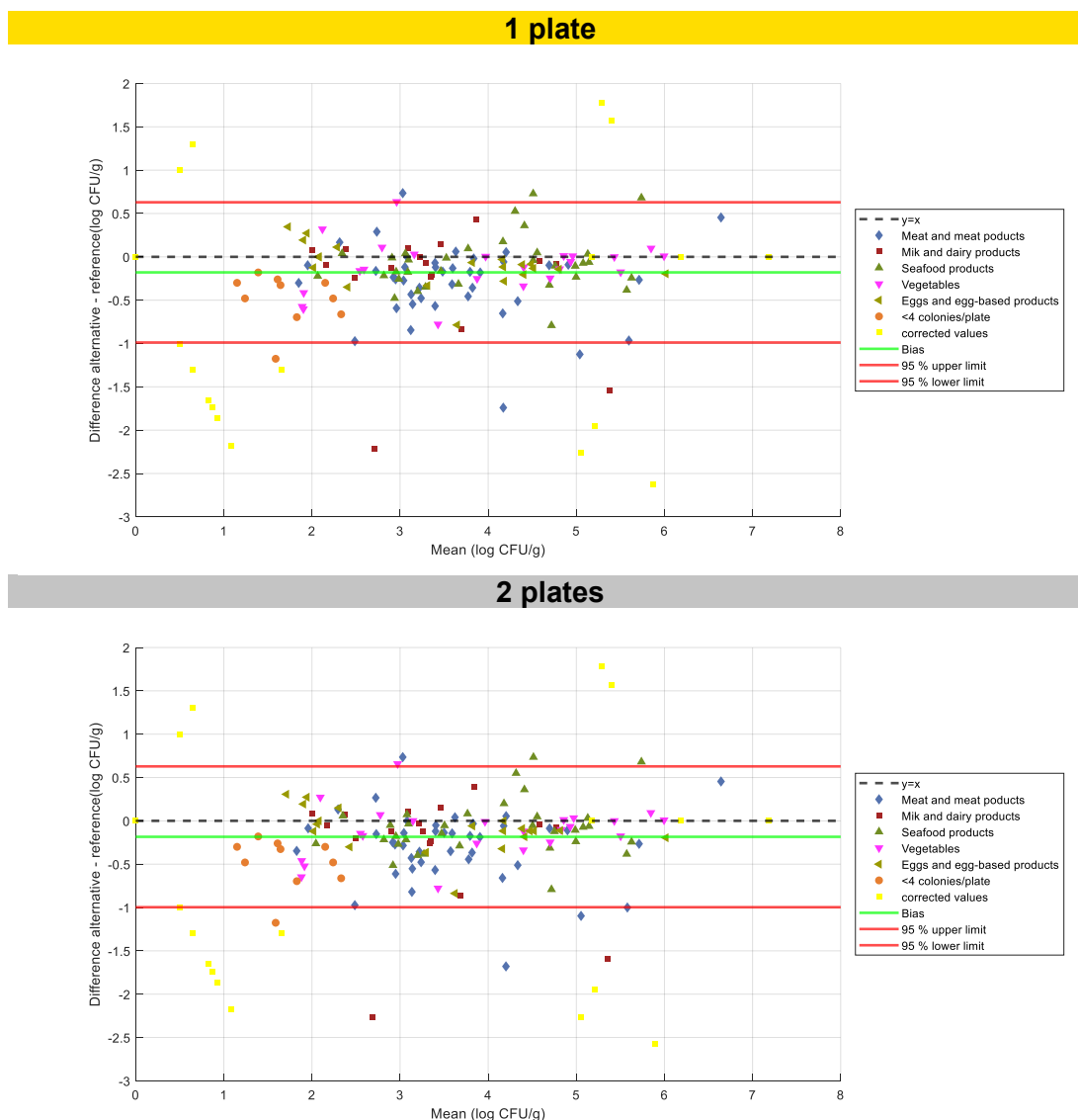
Table 5 - Calculated values

CHROMID Coliforms										
Category	n		Average difference (bias)		Standard deviation of differences (SD)		95% lower limit		95% upper limit	
	2 plates	1 plate	2 plates	1 plate	2 plates	1 plate	2 plates	1 plate	2 plates	1 plate
1	41	41	-0.30	-0.29	0.42	0.43	-1.16	-1.17	0.57	0.59
2	17	17	-0.30	-0.28	0.67	0.66	-1.77	-1.73	1.17	1.16
3	33	33	-0.08	-0.07	0.32	0.31	-0.74	-0.72	0.58	0.58
4	23	23	-0.13	-0.12	0.30	0.30	-0.77	-0.76	0.52	0.52
5	20	20	-0.10	-0.10	0.25	0.24	-0.64	-0.63	0.44	0.42
All categories	134	134	-0.18	-0.18	0.41	0.41	-1.00	-0.99	0.63	0.63

The average differences (bias) between the alternative method and the reference method is equal to -0.18 for both interpretations and it varies from – 0.30 log₁₀ (meat and dairy products) to -0.07 log₁₀ (seafood products).

The Bland-Altman difference plot for each individual category is given in **Appendix 6** and for all the samples in Figure 2.

Figure 2 – 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 above or lower than the limits are listed in Table 6.

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

Values in **green**: differences in favour of the alternative method
 UCL: Upper confidence limit

Values in **red**: differences in favour of the reference method
 LCL: Lower confidence limit

CHROMID Coliforms															
Classification of the data	Category	Type	N° Sample	Product	Reference method	Alternative method		Values before correction (Reference or/and alternative method)		Mean		Difference		LCL/UCL	
						2 plates	1 plate	2 plates	1 plate	2 plates	1 plate	2 plates	1 plate	2 plates	1 plate
Interpretable results by both methods	1	a	1866	Turkey skewer	6.08	5.08	5.11	/	/	5.58	5.60	-1.00	-0.97		
	1	a	1913	Ground turkey meat	5.04	3.36	3.30	/	/	4.20	4.17	-1.68	-1.74		
	1	a	1917	Chicken mechanically deboned meat	5.60	4.51	4.48	/	/	5.05	5.04	-1.10	-1.12		
	1	b	635	Sausage	2.66	3.40	3.40	/	/	3.03	3.03	0.74	0.74		
	2	b	6419	Raw milk cheese	6.15	4.56	4.60	/	/	5.35	5.37	-1.59	-1.54		
	2	b	6420	Dairy dessert	3.82	1.56	1.60	/	/	2.69	2.71	-2.26	-2.22		
	3	c	1280	Deli salad	5.40	6.08	6.08	/	/	5.74	5.74	0.68	0.68		
	3	c	1281	Salmon cubes	4.15	4.88	4.88	/	/	4.51	4.51	0.73	0.73		
	4	c	2060	Cooked sliced carrots	2.64	3.30	3.28	/	/	2.97	2.96	0.66	0.64		
< 4 CFU/plate	4	c	2123	Oriental tabouleh	2.18	1.00	1.00	/	/	1.59	1.59	-1.18	-1.18		
< or > limit of quantification	1	a	594	Raw pork meat	1.65	0.00	0.00	1.00	1.00	0.83	0.83	-1.65	-1.65		
	1	b	564	Ready to cook veal meal	0.00	1.00	1.00	1.00	1.00	0.50	0.50	1.00	1.00		
	1	b	1865	Frozen sausages	2.18	0.00	0.00	1.00	1.00	1.09	1.09	-2.18	-2.18		
	2	a	842	Raw milk	6.18	3.92	3.92	5.18	5.18	5.05	5.05	-2.26	-2.26		
	2	b	1145	Cheese	2.30	1.00	1.00	2.00	2.00	1.65	1.65	-1.30	-1.30		
	2	b	1146	Cheese (Raclette)	2.30	1.00	1.00	2.00	2.00	1.65	1.65	-1.30	-1.30		
	2	b	1273	Strawberries ice cream	0.00	1.30	1.30	1.00	1.00	0.65	0.65	1.30	1.30		
	2	c	6299	Milk powder	1.30	0.00	0.00	1.00	1.00	0.65	0.65	-1.30	-1.30		
	3	a	1652	Pilchards	1.00	0.00	0.00	1.00	1.00	0.50	0.50	-1.00	-1.00		
	3	a	1653	Mackerel	0.00	1.00	1.00	1.00	1.00	0.50	0.50	1.00	1.00		
	3	a	6724	Fish fillet	6.18	4.23	4.23	5.18	5.18	5.21	5.21	-1.95	-1.95		
	3	a	6725	Fish	7.18	4.60	4.56	6.18	6.18	5.89	5.87	-2.58	-2.62		
	4	a	627	Brussels sprouts	1.74	0.00	0.00	1.00	1.00	0.87	0.87	-1.74	-1.74		
	4	a	629	Green beans	1.30	0.00	0.00	1.00	1.00	0.65	0.65	-1.30	-1.30		
	4	a	1275	Green beans	4.40	6.18	6.18	5.18	5.18	5.29	5.29	1.78	1.78		
	4	a	1277	Green pepper	4.61	6.18	6.18	5.18	5.18	5.40	5.40	1.57	1.57		
	5	c	6281	Pastry	1.86	0.00	0.00	1.00	1.00	0.93	0.93	-1.86	-1.86		

3.1.5 Discordant results

The samples are classified in three categories (See Table 7).

Table 7 - Classification of the samples

		Number of samples	
		CHROMID Coliforms	
		2 plates	1 plate
Interpretable results by both methods	< LCL	5	4
	> UCL	4	4
	Total	9	8
<4 CFU/plate	< LCL	1	1
	> UCL	0	0
	Total	1	1
< or > the quantification limit	< LCL	12	12
	> UCL	5	5
	Total	17	17
Total < LCL		18	17
Total >UCL		9	9
TOTAL		27	26

For samples giving interpretable results by both methods, the number of samples with higher enumeration with the reference method is similar than the number of samples with higher enumeration using the alternative method (4 or 5 samples).

For the samples giving results below or above the quantification limit, more samples are below the LCL (1 or 12 vs 0 or 5) 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 the 2025 extension, one less sample are outside the limit of agreement for both interpretations.

The difference with the two plates interpretation is linked to the removal of the second dilution that lowered the final enumeration in the two-plate interpretation. (n°1866: 126 CFU at 1/1 000 and 7 CFU at 1/10 000).

3.1.6 Conclusion

The relative trueness study of the alternative method is satisfying for all the categories tested. No major difference was observed between both interpretations (1 or 2 plates).

3.2 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.

3.2.1 Matrices

Five matrices were tested with three contamination levels and five test portions per level. 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	<i>Klebsiella oxytoca</i> 42	Food product	300 50000 100000
2	Milk and dairy products	b Dessert	Vanilla dairy-based dessert	<i>Enterobacter agglomerans</i> 74	Cheese	
3	Seafood products	a Raw fish	Raw fish fillet	<i>Enterobacter cloacae</i> Ad230	Tuna	
4	Vegetables	c RTE, RTRH	Grated carrots	<i>Escherichia coli</i> 19	Grated carrots	
5	Eggs and egg based products	a Eggs	Liquid egg product	<i>Cronobacter sakazakii</i> Ad890	Liquid egg product	

3.2.2 Calculation and interpretation

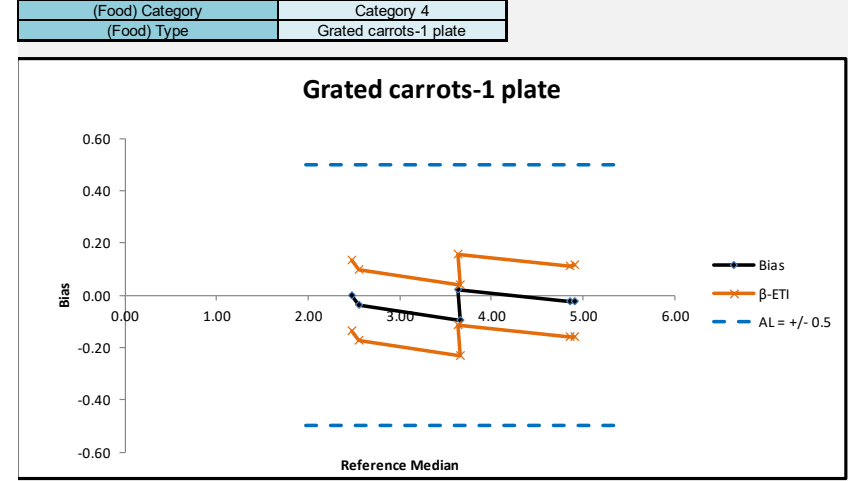
The raw data are provided in **Appendix 7**. The summary tables (in log₁₀ CFU/g) and calculations are provided in **Appendix 8**. The statistical results and the accuracy profiles are provided Figure 5.

The calculations will be 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>.

Figure 3 – Accuracy profile



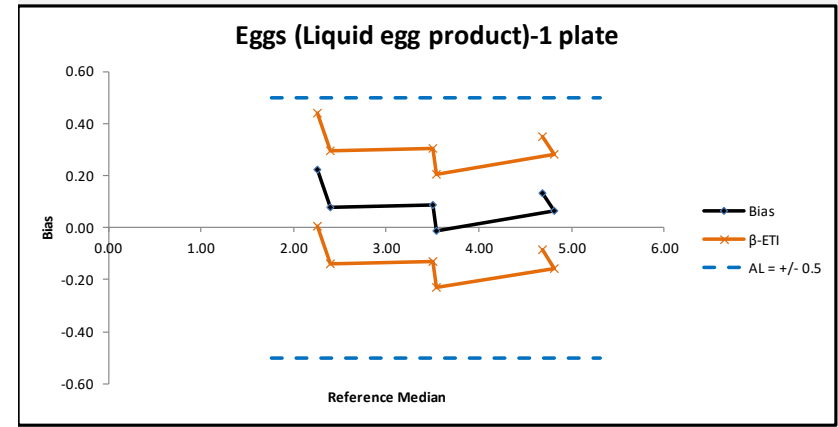
1 plate



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	0.000	-0.136	0.136	YES	YES
6551-6555	2.56	-0.038	-0.173	0.098	YES	YES
6541-6545	3.66	-0.095	-0.230	0.041	YES	YES
6556-6560	3.63	0.020	-0.116	0.155	YES	YES
6546-6550	4.86	-0.025	-0.161	0.111	YES	YES
6561-6565	4.91	-0.022	-0.158	0.114	YES	YES

	Reference method	Alternative method	SD repeatability of reference method <= 0.125	Final AL
SD Repeatability	0.089	0.094	YES	+/- 0.500

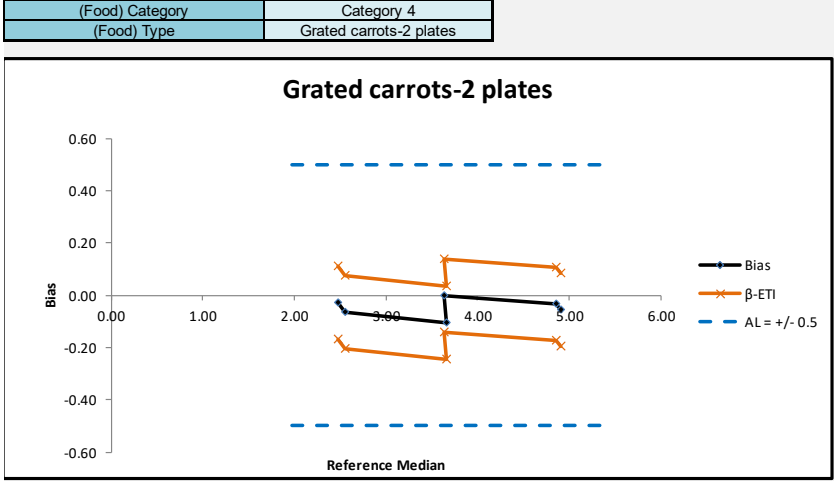
(Food) Category	Category 5
(Food) Type	Eggs (Liquid egg product)-1



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	0.222	0.004	0.440	YES	YES
6032-6036	2.40	0.079	-0.139	0.297	YES	YES
6022-6026	3.51	0.086	-0.132	0.304	YES	YES
6037-6041	3.54	-0.013	-0.231	0.205	YES	YES
6027-6031	4.81	0.062	-0.156	0.280	YES	YES
6042+6046	4.68	0.132	-0.086	0.350	YES	YES

	Reference method	Alternative method	SD repeatability of reference method <= 0.125	Final AL
SD Repeatability	0.152	0.151	NO	+/- 0.500

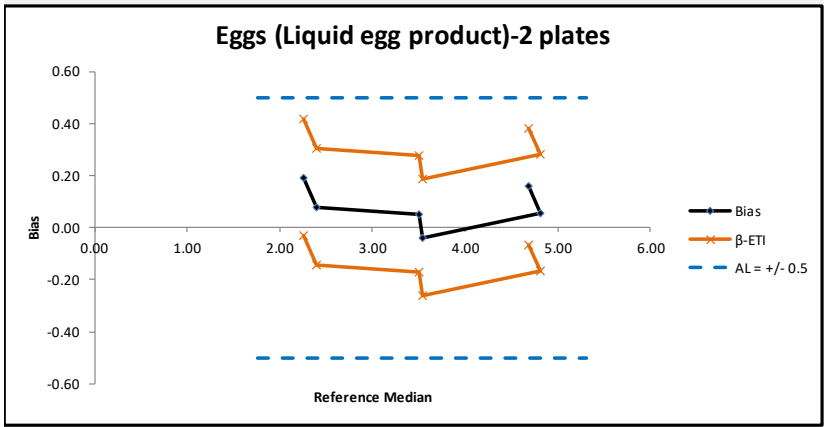
2 plates



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	-0.170	0.110	YES	YES
6551-6555	2.56	-0.065	-0.205	0.075	YES	YES
6541-6545	3.66	-0.106	-0.246	0.034	YES	YES
6556-6560	3.63	0.000	-0.140	0.140	YES	YES
6546-6550	4.86	-0.031	-0.171	0.109	YES	YES
6561-6565	4.91	-0.057	-0.197	0.083	YES	YES

	Reference method	Alternative method	SD repeatability of reference method <= 0.125	Final AL
SD Repeatability	0.089	0.097	YES	+/- 0.500

(Food) Category	Category 5
(Food) Type	Eggs (Liquid egg product)-2



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

The lower and upper β .ETI are within the acceptability limits for all the matrix/strain pairs tested. The acceptability limits are fixed at + 0.5 log₁₀ and - 0.5 log₁₀ for all the matrices tested.

The SD repeatability of the reference method is always below to 0.250.

No difference was observed between the single plate and the two plates interpretation.

3.2.3 Conclusion

The observed profiles meet the AL. All the accuracy profiles fulfil the performance criteria. No difference was observed between both interpretations (1 or 2 plates).

3.3 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 9**.

> 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.

3.4 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.

4 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 ISO 16140-2:2016 and ISO 16140-2/A1:2024 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).

4.1 Experimental parameters controls

4.1.1 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.

4.1.2 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	<i>Probe not received</i>
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.

4.2 Result analysis

Raw data are given in **Appendix 10**.

4.2.1 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	< 0.00	< 0.00	< 0.00	< 0.00
1 to 2	1.92	1.97	1.92	1.85
2 to 3	2.99	2.71	2.90	2.82
3 to 4	4.00	3.89	3.89	3.92

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

4.2.2 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** (log₁₀ CFU/g).

Table 12 - Summary of data (CFU/g)

Collaborator	CFU/g															
	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	100	60	80	50	730	800	750	640	6300	6100	6600	8200
B	<1	<1	<1	<1	90	75	94	81	1000	1000	1000	730	11000	8900	11000	9400
C	<10	<10	<10	<10	55	100	73	45	760	770	530	720	8100	8500	7800	7100
D	<10	<10	<10	<10	55	70	82	91	760	740	790	660	5800	7300	7400	5700
E	<1	<1	<1	<1	65	83	93	63	1200	770	920	840	8900	8100	6800	9500
F	<1	<1	<1	<1	74	84	85	76	1200	740	1000	750	12000	13000	7100	8800
G	<10	<10	<10	<10	45	20	55	110	740	690	550	580	8200	8500	5800	6900
H	<1	<1	<1	<1	78	78	61	60	620	800	810	750	7900	8800	8000	8500
I	<1	<1	<1	<1	63	85	73	85	1100	1000	900	810	11000	10000	9700	8500
J	<1	<1	<1	<1	65	61	65	69	770	680	770	800	6500	7700	8300	8100
K	<10	<10	<10	<10	100	73	82	45	650	860	710	750	7500	7200	8400	7800
L	<10	<10	<10	<10	150	36	100	82	930	580	630	790	8100	7200	7500	8700
M	<1	<1	<1	<1	75	60	71	66	760	710	820	780	9400	8900	9600	8500
N	<1	<1	<1	<1	75	71	73	65	790	710	820	930	11000	9600	9000	9000
ADRIA	<1	<1	<1	<1	83	93	83	70	970	510	790	660	10000	7700	7700	8400

Table 13 - Summary of data (log₁₀ CFU/g)

Collaborator	Log CFU/g															
	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	2.00	1.78	1.90	1.70	2.86	2.90	2.88	2.81	3.80	3.79	3.82	3.91
B	<0.00	<0.00	<0.00	<0.00	1.95	1.88	1.97	1.91	3.00	3.00	3.00	2.86	4.04	3.95	4.04	3.97
C	<1.00	<1.00	<1.00	<1.00	1.74	2.00	1.86	1.65	2.88	2.89	2.72	2.86	3.91	3.93	3.89	3.85
D	<1.00	<1.00	<1.00	<1.00	1.74	1.85	1.91	1.96	2.88	2.87	2.90	2.82	3.76	3.86	3.87	3.76
E	<0.00	<0.00	<0.00	<0.00	1.81	1.92	1.97	1.80	3.08	2.89	2.96	2.92	3.95	3.91	3.83	3.98
F	<0.00	<0.00	<0.00	<0.00	1.87	1.92	1.93	1.88	3.08	2.87	3.00	2.88	4.08	4.11	3.85	3.94
G	<1.00	<1.00	<1.00	<1.00	1.65	1.30	1.74	2.04	2.87	2.84	2.74	2.76	3.91	3.93	3.76	3.84
H	<0.00	<0.00	<0.00	<0.00	1.89	1.89	1.79	1.78	2.79	2.90	2.91	2.88	3.90	3.94	3.90	3.93
I	<0.00	<0.00	<0.00	<0.00	1.80	1.93	1.86	1.93	3.04	3.00	2.95	2.91	4.04	4.00	3.99	3.93
J	<0.00	<0.00	<0.00	<0.00	1.81	1.79	1.81	1.84	2.89	2.83	2.89	2.90	3.81	3.89	3.92	3.91
K	<1.00	<1.00	<1.00	<1.00	2.00	1.86	1.91	1.65	2.81	2.93	2.85	2.88	3.88	3.86	3.92	3.89
L	<1.00	<1.00	<1.00	<1.00	2.18	1.56	2.00	1.91	2.97	2.76	2.80	2.90	3.91	3.86	3.88	3.94
M	<0.00	<0.00	<0.00	<0.00	1.88	1.78	1.85	1.82	2.88	2.85	2.91	2.89	3.97	3.95	3.98	3.93
N	<0.00	<0.00	<0.00	<0.00	1.88	1.85	1.86	1.81	2.90	2.85	2.91	2.97	4.04	3.98	3.95	3.95
ADRIA	<0.00	<0.00	<0.00	<0.00	1.92	1.97	1.92	1.85	2.99	2.71	2.90	2.82	4.00	3.89	3.89	3.92

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).

4.3 Calculation and interpretation

4.3.1 Visual linearity checking

The **Figure 4** shows the data points after log₁₀ 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.

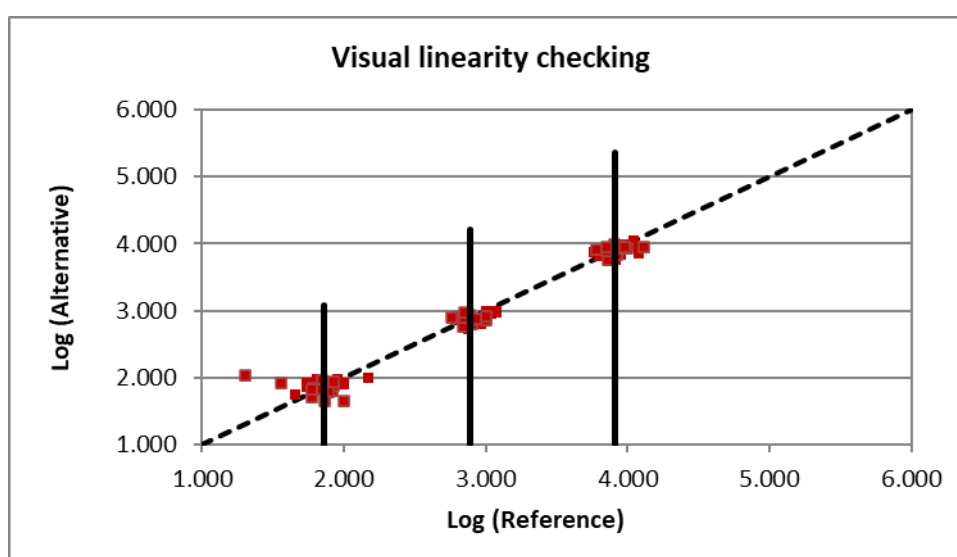
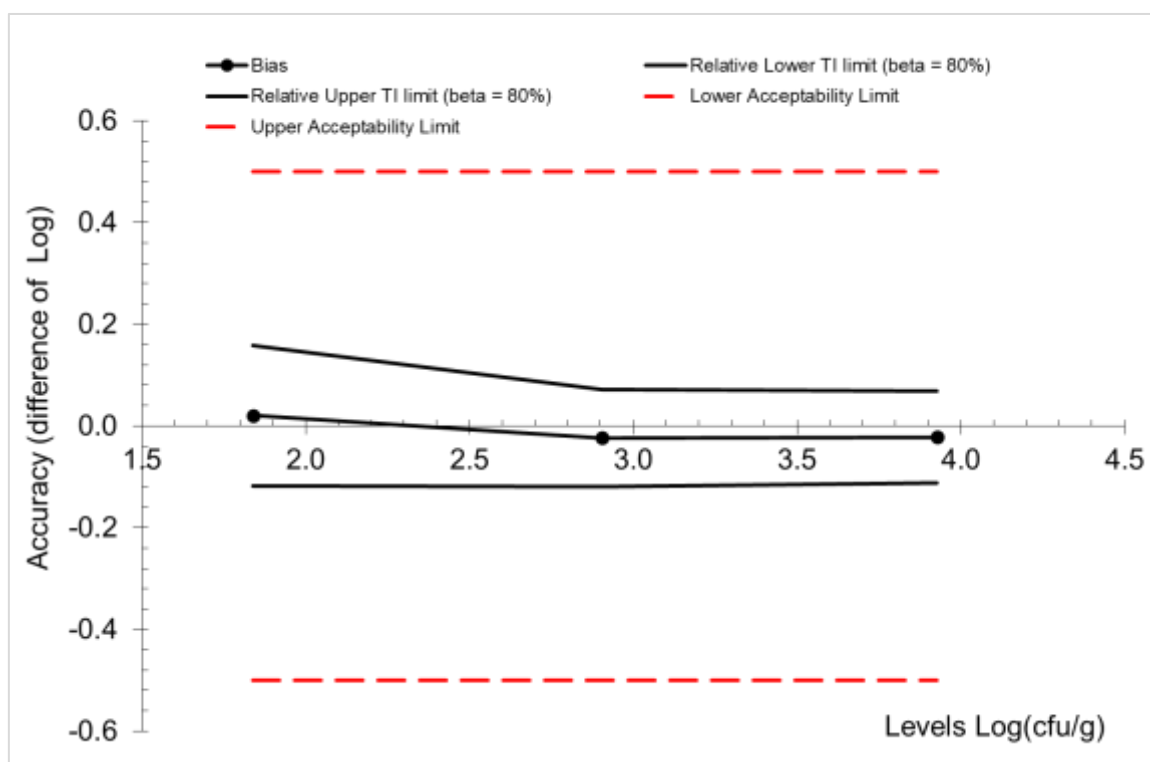
Figure 4 - Visual linearity checking


Figure 5 - Accuracy profile



It is observed that for all the levels, the tolerance interval limits of the alternative method are within the acceptable limits of $\pm 0.5 \log_{10}$.

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

4.3.3 Conclusion

The alternative method is equivalent to the reference method.

5 CONCLUSION

The observed data and interpretation confirm the performances of the alternative method with an interpretation based on one plate:

- 177 samples were analysed for the relative trueness study, 134 interpretable results, 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 log₁₀ CFU/g in the ISO 16140-2.
- No major difference was observed between one and two plates interpretation.
- 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 ISO 16140-2:2016 and ISO16140-2/A1:2024. 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, 27 November 2025

Lizaïg GOUGUET

Study Engineer

Method performance in food microbiology

Astrid CARIOU

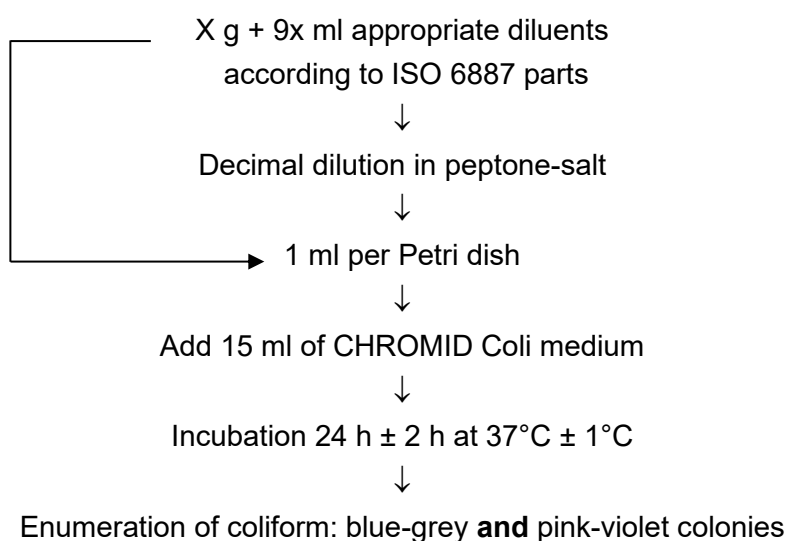
Manager

Method performance in food microbiology

I hereby attest to the validation of the results of the analyses carried out under the COFRAC accreditation.

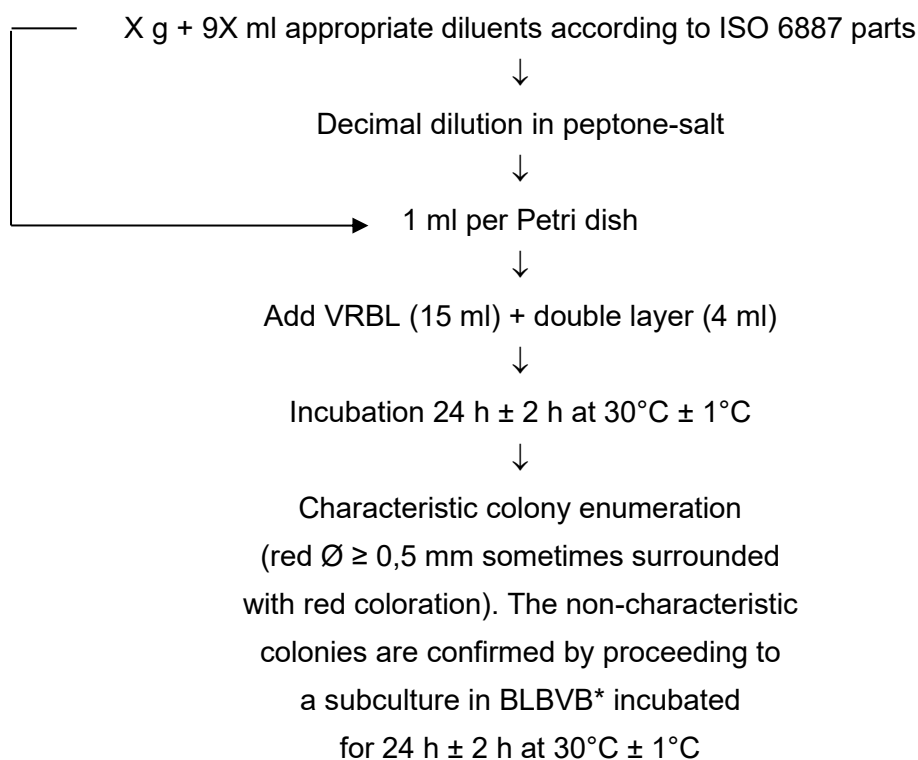
I hereby attest to the validation of the verification of the conformity of the report (opinion and interpretation).

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



Interpretation can be done using 2 plates from two dilution levels
or using 1 plate from one dilution level

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



**BLBVB (Bouillon lactosé bilié au vert brillant): BGLB (Brilliant green lactose bile broth)*

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	<i>Escherichia coli</i> Ad 218	Poultry	Seeding 7 days at 4°C	1	a
2011	2474	Blanc de poulet	White chicken meat	<i>Escherichia coli</i> Ad 218	Poultry	Seeding heat treatment 10 min 56°C	1	a
2011	2152	Saucisses fumées bio	Smoked sausages	<i>Escherichia coli</i> 21	Cured breast	Seeding heat treatment 10 min 56°C	1	b
2011	2153	Saucisses de Montbéliard	Montbéliard sausage	<i>Escherichia coli</i> 21	Cured breast	Seeding heat treatment 10 min 56°C	1	b
2011	2185	Saucisses natures	Sausages	<i>Escherichia coli</i> 6	Sausage	Seeding 6 days at 4°C	1	b
2011	2471	Chorizo	Chorizo	<i>Escherichia coli</i> 1	Pork	Seeding heat treatment 10 min 56°C	1	b
2011	2472	Chorizo	Chorizo	<i>Escherichia coli</i> 1	Pork	Seeding heat treatment 10 min 56°C	1	b
2011	2473	Saucisson à l'ail	Garlic sausage	<i>Escherichia coli</i> 1	Pork	Seeding heat treatment 10 min 56°C	1	b
2011	2477	Filets de bacon fumé	Smoked bacon	<i>Escherichia coli</i> 21	Pork	Seeding 7 days at 4°C	1	b
2011	2478	Poitrine fumée tranches fines	Sliced bacon	<i>Escherichia coli</i> 1	Pork	Seeding 7 days at 4°C	1	b
2011	2479	Jambon cru	Raw ham	<i>Escherichia coli</i> 21	Pork	Seeding 7 days at 4°C	1	b
2011	2059	Chili con carné	Chilli con carne	<i>Escherichia coli</i> 144	Paella	Seeding heat treatment 15 min 56°C	1	c
2011	2065	Nems au porc	Pork nem	<i>Escherichia coli</i> 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	<i>Escherichia coli</i> 108	Ready to cook meal	Seeding heat treatment 15 min 56°C	1	c
2011	2151	Sandwich jambon œuf crudités	Sandwich (ham and vegetables)	<i>Escherichia coli</i> Ad 222	Egg product	Seeding 4°C 48 h	1	c
2011	2368	Sandwich jambon œuf tomate	Ham, tomato and egg sandwich	<i>Escherichia coli</i> 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		
2011	2369	Jambon cuit à la broche	Cooked ham	<i>Escherichia coli</i> 101	Pork	Seeding heat treatment 10 min 56°C	1	c
2018	6297	Lait en poudre écrémé	Skimmed milk powder	<i>Escherichia coli</i> Ad1816	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	2	c
2018	6298	Lait en poudre écrémé	Skimmed milk powder	<i>Escherichia coli</i> 118	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	2	c
2018	6299	Lait en poudre entier	Milk powder	<i>Escherichia coli</i> Ad1816	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	2	c
2018	6300	Lait en poudre entier	Milk powder	<i>Escherichia coli</i> 118	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	2	c
2018	6301	Lait en poudre écrémé	Skimmed milk powder	<i>Escherichia coli</i> 118	Dairy product	Seeding lyophilized strain 2 weeks at room temperature	2	c
2018	6723	Filet de julienne	Fish fillet	<i>Escherichia coli</i> Ad1384	Sea water	Seeding 48 h 3 ± 2°C	3	a
2018	6724	Filet de Merlan	Fish fillet	<i>Escherichia coli</i> Ad1384	Sea water	Seeding 48 h 3 ± 2°C	3	a
2018	6725	Bar	Fish	<i>Escherichia coli</i> Ad1384	Sea water	Seeding 48 h 3 ± 2°C	3	a
2018	6726	Lamelles d'encornet géant	Squids	<i>Escherichia coli</i> Ad1385	Sea water	Seeding 48 h 3 ± 2°C	3	a
2018	6727	Encornet criée	Squids	<i>Escherichia coli</i> Ad1385	Sea water	Seeding 48 h 3 ± 2°C	3	a
2018	6728	Crevettes crues décortiquées	Raw shrimps	<i>Escherichia coli</i> Ad1385	Sea water	Seeding 48 h 3 ± 2°C	3	a
2018	6729	Noix de saint jacques	Scallops	<i>Escherichia coli</i> Ad1385	Sea water	Seeding 48 h 3 ± 2°C	3	a
2011	2122	Sandwich saumon fumé ciboulette	Sandwich (smoked salmon and chives)	<i>Escherichia coli</i> 93	Ready to cook cod	Seeding 4°C 8 days	3	b
2011	2061	Nems au crabe	Crab nem	<i>Escherichia coli</i> 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)	<i>Escherichia coli</i> Ad 222	Egg product	Seeding heat treatment 10 min 56°C	3	c
2011	2120	Ratatouille surgelée	Frozen ratatouille	<i>Escherichia coli</i> 19	Sliced carrots	Seeding -20°C 8 days	4	b
2011	2183	Quiche aux poireaux surgelée	Frozen links quiche	<i>Escherichia coli</i> 142	Egg product	Seeding 6 days at -20°C	4	b

Analysis date	Sample N°	Product (French name)	Product	Artificial contamination			Category	Type
				Strain	Origin	Injury		
2011	2367	Tarte tomate poivron surgelée	Frozen tomato and pepper pie	<i>Escherichia coli</i> 142	Egg product	Seeding 7 days -20°C	4	b
2011	2058	Ratatouille	Ratatouille	<i>Escherichia coli</i> 19	Grated carrots	Seeding heat treatment 15 min 56°C	4	c
2011	2060	Carottes en lamelles cuites	Cooked sliced carrots	<i>Escherichia coli</i> 144	Paella	Seeding heat treatment 10 min 56°C	4	c
2011	2121	Salade boulghour légumes du soleil	Salad (bulghur and vegetables)	<i>Escherichia coli</i> 19	Sliced carrots	Seeding 4°C 8 days	4	c
2011	2123	Taboulé à l'orientale	Oriental tabbouleh	<i>Escherichia coli</i> 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)	<i>Escherichia coli</i> 93	Ready to cook cod	Seeding heat treatment 10 min 56°C	4	c
2011	2149	Quiche aux légumes	Vegetables quiche	<i>Escherichia coli</i> 93	Ready to cook cod	Seeding heat treatment 10 min 56°C	4	c
2011	2363	Salade carotte céleri	Carrots celery salad	<i>Escherichia coli</i> 19	Sausage	Seeding 7 days at 4°C	4	c
2011	2365	Macédoine de légumes	Mixed vegetables	<i>Escherichia coli</i> 144	Paella	Seeding heat treatment 10 min 56°C	4	c
2011	2366	Macédoine de légumes	Mixed vegetables	<i>Escherichia coli</i> 142	Egg product	Seeding heat treatment 10 min 56°C	4	c
2011	2483	Piémontaise au jambon	Salad (Piémontaise)	<i>Escherichia coli</i> 108	Ready to eat meal	Seeding heat treatment 10 min 56°C	4	c
2018	6730	Mayonnaise fraîche	Mayonnaise	<i>Escherichia coli</i> 143	Egg product	Seeding 48 h 3 ± 2°C	5	b
2018	6731	Tortilla espagnole aux oignons	Tortilla with onions	<i>Escherichia coli</i> 143	Egg product	Seeding 48 h 3 ± 2°C	5	b
2011	2062	Tartelette cocktail	Cocktail pie	<i>Escherichia coli</i> Ad 222	Egg product	Seeding heat treatment 15 min 56°C	5	c
2011	2063	Tartelette cocktail	Cocktail pie	<i>Escherichia coli</i> 142	Egg product	Seeding heat treatment 10 min 56°C	5	c
2011	2064	Tartelette fraise	Strawberries pie	<i>Escherichia coli</i> Ad 222	Egg product	Seeding heat treatment 10 min 56°C	5	c

Appendix 4 - Relative trueness study: raw data

ISO 7218 (2024) changes

Chosen plate for interpretation

Values in red: dilution inconsistency or above the quantification limit (not taken into account)

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
										Enumeration			2 plates interpretation		1 plate interpretation					
				Dilution	Rep 1		Rep 2		Interpretation 2025 Rep 1		Dilution	Rep 1	Rep 2	Interpretation 2025 Replicate 1		CFU/g	log (CFU/g)	log(CFU/g) 1 plate – 2 plates		
CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b		CFU/g	log CFU/g	CFU/ plate	CFU/ plate	CFU/g	log CFU/g										
2006	562	Sauté de veau	Raw veal meat	100	36	36	29	52	3700	3.57	100	25	27	2700	3.43	2500	3.40	-0.03	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	30	1.48*	10	1	1	10	1.00*	10	1.00*	0.00	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	<1.00	10	1	0	10	1.00*	10	1.00*	0.00	1	b
				100	0	0	0	0			100	1	0							
2006	589	Tartare	Tartar	10	7	6	9	10	64	1.81	10	3	3	30	1,48*	30	1,48*	0.00	1	c
				100	0	1	0	0		Ne	100	0	0							
2006	590	Saucisse	Sausages	10	40	24	44	45	390	2.59	10	76	88	720	2.86	760	2.88	0.02	1	b
				100	3	5	4	6			100	3	12							
2006	591	Saucisse	Sausages	10	9	9	7	8	100	2.00	10	5	7	45	1.65	50	1.70	0.05	1	b
				100	2	1	1	1		Ne	100	0	0		Ne					
2006	592	Chair à saucisse	Sausage meat	10	15	12	12	11	150	2.18	10	3	1	30	1,48*	30	1,48*	0.00	1	b
				100	1	1	1	2			100	0	0							
2006	594	Sauté de porc	Raw pork meat	10	5	4	6	5	45	1.65	10	0	1	<10	<1.00	<10	<1.00	0.00	1	a
				100	0	0	0	0		Ne	100	0	0							
2006	596	Viande blanche	Raw poultry meat	10	16	15	12	19	170	2.23	10	25	16	230	2.36	250	2.40	0.04	1	a
				100	3	2	2	2			100	0	2							
2006	628	Viande de porc	Raw pork meat	10000	>150	>150	>150	>150	2600000	6.41	10000	>150	>150	7400000	6.87	7400000	6.87	0.00	1	a
				100000	26	13	22	32			100000	74	37							
2006	633	Andouille	Chitterlings	1000	17	17	19	26	16000	4.20	100	>150	>150	14000	4.15	14000	4.15	0.00	1	b
				10000	1	1	1	3			1000	14	20							
2006	634	Saucisson à l'ail	Delicatessen sausage)	100	3	6	1	6	300	2.48*	100	1	0	100	2.00*	100	2.00*	0.00	1	b
				1000	1	0	0	3	1000	0	0									
2006	635	Saucisse	Sausage	100	5	5	37	28	460	2.66	100	25	24	2500	3.40	2500	3.40	0.00	1	b
				1000	0	0	5	2		Ne	1000	3	1							
2006	636	Porc cuisiné au piment	Ready to reheat pork	100	29	27	29	34	2900	3.46	100	22	24	2200	3.34	2200	3.34	0.00	1	c
				1000	3	4	6	3			1000	2	4							
2006	638	Merguez	Merguez	1000	56	51	57	47	55000	4.74	1000	44	52	45000	4.65	44000	4.64	-0.01	1	b
				10000	4	8	6	8			10000	6	6							
2006	639	Escalope de dinde	Raw turkey meat	100	98	70	83	82	10000	4.00	100	44	40	4300	3.63	4400	3.64	0.01	1	a
				1000	12	15	24	20			1000	3	2							
2006	640	Escalope de poulet	Raw chicken meat	1000	11	4	8	5	10000	4.00	100	35	30	3600	3.56	3500	3.54	-0.01	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	1100	3.04	10	Background flora>300		ND	ND	Nd	ND	0.00	1	c
				100	11	8	13	12												
2011	1865	Chipolatas surgelées	Frozen sausages	10	15				150	2.18	10	0		<10	<1.00	<10	<1.00	0.00	1	b
				100	1						100	0								
2011	1866	Brochette de dinde	Turkey skewer	1000	>150				1200000	6.08	1000	126		120000	5.08	130000	5.11	0.03	1	a
				10000	121						10000	7								
2011	1867	Brochette de dinde colombo	Colombo turkey skewer	10	>150				>15000	>4.18	10	>150		>15000	>4.18	>15000	>4.18	0.00	1	a
				100	>150						100	>150								

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

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		Interpretation 2025 Rep 1		Enumeration		2 plates interpretation		1 plate interpretation				
						CFU/plate a	CFU/plate b	CFU/plate a	CFU/plate b	CFU/g	log CFU/g	Dilution	Rep 1	Rep 2	Interpretation 2025 Replicate 1		CFU/g			log (CFU/g)
2011	1868	Viande d'épaule de dinde saumurée	Cured turkey meat	100	67				7000	3.85	100	67		6500	3.81	6700	3.83	0.01	1	a
				1000	10						1000	5								
2011	1869	Chipolatas	Sausages	100	20				2200	3.34	10	81		820	2.91	810	2.91	-0.01	1	b
				1000	4						100	9								
2011	1870	Chipolatas	Sausages	100	16				1500	3.18	10	80		780	2.89	800	2.90	0.01	1	b
				1000	1						100	6								
2011	1871	Saucisse fumée	Smoked sausage	100	17				1800	3.26	10	46		440	2.64	460	2.66	0.02	1	b
				1000	3						100	2								
2011	1911	Paupiette bardée	Ready to cook veal meal	10	111				1100	3.04	10	64		620	2.79	640	2.81	0.01	1	b
				100	9						100	4								
2011	1912	Paupiette bardée	Ready to cook veal meal	10	111				1200	3.08	10	66		640	2.81	660	2.82	0.01	1	b
				100	20						100	4								
2011	1913	Viande d'échine de dinde broyée	Ground turkey meat	1000	ND				110000	5.04	100	20		2300	3.36	2000	3.30	-0.06	1	a
				10000	11						1000	5								
2011	1915	Carcasse de dinde	Turkey carcass	1000	30				31000	4.49	100	69		6800	3.83	6900	3.84	0.01	1	a
				10000	4						1000	6								
2011	1916	Viande rouge de dinde dénervée	Turkey red meat	100	13				1300	3.11	10	99		940	2.97	990	3.00	0.02	1	a
				1000	1						100	4								
2011	1917	VSM de poulet	Chicken mechanically deboned meat	1000	>150				400000	5.60	1000	30		32000	4.51	30000	4.48	-0.03	1	a
				10000	40						10000	5								
2011	1918	Cornet de porc	Pork meat	100	101				10000	4.00	100	66		6500	3.81	6600	3.82	0.01	1	a
				1000	11						1000	5								
2011	1919	PV 3 mm Porc	Pork meat	1000	89				90000	4.95	1000	73		70000	4.85	73000	4.86	0.02	1	a
				10000	10						10000	4								
2011	2059	Chili con carné	Chili con carné	10	>150				3000	3.48	10	>150		1000	3.00	1000	3.00	0.00	1	c
				100	30						100	10								
2011	2065	Nems au porc	Pork nem	100	59				5600	3.75	100	27		2500	3.40	2700	3.43	0.03	1	c
				1000	3						1000	1								
2011	2066	Ravioli chinois au porc	Chinese ready to eat food	10	92				940	2.97	10	10		100	2.00	100	2.00	0.00	1	c
				100	11						100	1								
2011	2151	Sandwich jambon œuf crudités	Sandwich (ham and vegetables)	100	46				4600	3.66	100	34		3300	3.52	3400	3.53	0.01	1	c
				1000	5						1000	2								
2011	2152	Saucisses fumées bio	Smoked sausages	10	63				640	2.81	10	44		450	2.65	440	2.64	-0.01	1	b
				100	7						100	5								
2011	2153	Saucisses de Montbéliard	Montbéliard sausage	100	42				4000	3.60	100	46		4400	3.64	4600	3.66	0.02	1	b
				1000	2						1000	2								
2011	2185	Saucisses natures	Sausages	100	48				4800	3.68	100	13		1300	3.11	1300	3.11	0.00	1	b
				1000	5						1000	1								
2011	2368	Sandwich jambon œuf tomate	Ham, tomato and egg sandwich	10	>150				2600	3.41	10	74		730	2.86	740	2.87	0.01	1	c
				100	26						100	6								
2011	2369	Jambon cuit à la broche	Cooked ham	10	9				100	2.00	10	8		82	1.91	80	1.90	-0.01	1	c
				100	2					Ne	100	1			Ne		Ne			
2011	2370	Escalope de dinde	Turkey cutley	10	109				1200	3.08	10	117		1200	3.08	1200	3.08	0.00	1	a
				100	18						100	12								
2011	2471	Chorizo	Chorizo	100	37				3500	3.54	10	50		530	2.72	500	2.70	-0.03	1	b
				1000	2						100	8								
2011	2472	Chorizo	Chorizo	100	23				2500	3.40	10	107		1100	3.04	1100	3.04	0.00	1	b
				1000	5						100	16								
2011	2473	Saucisson à l'ail	Garlic sausage	100	77				7600	3.88	100	51		5100	3.71	5100	3.71	0.00	1	b
				1000	7						1000	13								

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		
										Enumeration			2 plates interpretation		1 plate interpretation					
				Dilution	Rep 1		Rep 2		Interpretation 2025 Rep 1		Dilution	Rep 1	Rep 2	Interpretation 2025 Replicate 1		CFU/g			log (CFU/g)	log(CFU/g) 1 plate – 2 plates
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g	log CFU/g		CFU/ plate	CFU/ plate	CFU/g	log CFU/g					
2011	2474	Blanc de poulet	White chicken meat	1000	>150			700000	5.85	1000	>150		380000	5.58	380000	5.58	0.00	1	a	
				10000	70					10000	38									
2011	2477	Filets de bacon fumé	Smoked bacon	100	28			2700	3.43	100	23		2400	3.38	2300	3.36	-0.02	1	b	
				1000	2					1000	3									
2011	2478	Poitrine fumée tranches fines	Sliced bacon	100	>150			15000	4.18	100	>150		17000	4.23	17000	4.23	0.00	1	b	
				1000	15					1000	17									
2011	2479	Jambon cru	Raw ham	1000	41			39000	4.59	1000	12		12000	4.08	12000	4.08	0.00	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		Interpretation 2025 Rep 1		Dilution	Rep 1	Rep 2	Interpretation 2025 Replicate 1		1 plate interpretation				
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g	log CFU/g		CFU/ plate	CFU/ plate	CFU/g	log CFU/g	CFU/g	log (CFU/g)			log(CFU/g) 1 plate – 2 plates
2006	725	Lait cru	Raw milk	100	>150	>150	>150	>150	40000	4.60	100	>150	>150	36000	4.56	36000	4.56	0.00	2	a
				1000	40	37	61	42			1000	36	55							
2006	726	Rocamadour	Raw milk cheese (Rocamadour)	100	20	24	16	28	2100	3.32	100	18	23	1600	3.20	1800	3.26	0.05	2	b
				1000	3	3	0	4			1000	0	3							
2006	727	Mozzarella	Mozzarella	100	>150	>150	>150	>150	65000	4.81	100	>150	>150	54000	4.73	54000	4.73	0.00	2	b
				1000	65	71	56	69			1000	54	63							
2006	824	Lait cru	Raw milk	10	105	133	128	128	1100	3.04	1	>150	>150	1400	3.15	1400	3.15	0.00	2	a
				100	11	12	10	12			10	137	140							
2006	826	Mozzarella	Mozzarella	10	17	16	18	18	160	2.20	10	13	13	140	2.15	130	2.11	-0.03	2	b
				100	1	2	3	4			100	2	0							
2006	842	Lait cru	Raw milk	100	>150	>150	>150	>150	>150000	>5.18	10	>150	>150	8300	3.92	8300	3.92	0.00	2	a
				1000	>150	>150	>150	>150			100	83	70							
2006	847	Crottin de chèvre	Goat cheese	1000	>150	>150	>150	>150	>1500000	>6.18	1000	>150	>150	>1500000	>6.18	>1500000	>6.18	0.00	2	b
				10000	>150	>150	>150	>150			10000	>150	>150							
2006	848	Crottin de chèvre	Goat cheese	100	>150	>150	>150	>150	>150000	>5.18	100	>150	>150	>150000	>5.18	>150000	>5.18	0.00	2	b
				1000	>150	>150	>150	>150			1000	>150	>150							
2006	1143	Lait	Milk	100	17	10	20	28	1700	3.23	100	17	26	1600	3.20	1700	3.23	0.03	2	a
				1000	2	2	4	1			1000	1	2							
2006	1145	Fromage Maredsous	Cheese	100	2	0	2	0	200	2.30*	100	0	0	<100	<2.00	<100	<2.00	0.00	2	b
				1000	0	0	0	0			1000	0	0							
2006	1146	Raclette	Cheese (Raclette)	100	2	1	1	1	200	2.30*	100	0	2	<100	<2.00	<100	<2.00	0.00	2	b
				1000	0	0	0	0			1000	0	0							
2006	1270	Poudre de lait	Milk powder	100	31	37	13	28	2900	3.46	100	17	24	1600	3.20	1700	3.23	0.03	2	c
				1000	1	1	1	0			1000	1	2							
2006	1271	Poudre de lait	Milk powder	100	45	33	56	49	4500	3.65	100	119	80	11000	4.04	12000	4.08	0.04	2	c
				1000	0	3	6	6			1000	7	8							
2006	1272	Poudre de lait	Milk powder	10	10	5	9	13	91	1.96	10	11	10	110	2.04	110	2.04	0.00	2	c
				100	0	1	1	0			100	1	1							
2006	1273	Glace fraise	Strawberries ice cream	10	0	0	0	0	<10	<1.00	10	2	3	20	1.30*	20	1.30*	0.00	2	b
				100	0	0	0	0			100	0	0							
2006	1274	Glace poire	Pear ice cream	10	0	0	0	0	<10	<1.00	10	0	0	<10	<1.00	<10	<1.00	0.00	2	b
				100	0	0	0	0			100	0	0							
2006	1290	Crème fraiche	Cream	100	133	142	>150	>150	13000	4.11	100	19	36	1800	3.26	1900	3.28	0.02	2	b
				1000	12	14	23	22			1000	1	2							
2018	6418	Lait cru	Raw milk	100	24				2400	3.38	100	34		3400	3.53	3400	3.53	0.00	2	a
				1000	2						1000	3								
2018	6419	Brie de Meaux	Raw milk cheese	100000	14				1400000	6.15	10000	4		36000	4.56	40000	4.60	0.05	2	b
				1000000	1						100000	0		Ne		Ne				
2018	6420	Riz au lait	Dairy dessert	100	69				6600	3.82	10	4		36	1.56	40	1.60	0.05	2	b
				1000	4						100	0		Ne		Ne				
2018	6167	Lait cru	Raw milk	10	42				400	2.60	10	23		250	2.40	230	2.36	-0.04	2	a
				100	2						100	4								
2018	6168	Lait cru	Raw milk	10	22				220	2.34	10	27		260	2.41	270	2.43	0.02	2	a
				100	2						100	2								
2018	6283	Fromage Roquefort au Lait cru	Raw milk cheese (Roquefort)	10	0				<10	<1.00	10	0		<10	<1.00	<10	<1.00	0.00	2	b
				100	0						100	0								

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

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
										Enumeration			2 plates interpretation		1 plate interpretation					
				Dilution	Rep 1		Rep 2		Interpretation 2025 Rep 1		Dilution	Rep 1	Rep 2	Interpretation 2025 Replicate 1	CFU/g	log (CFU/g)	log(CFU/g) 1 plate – 2 plates			
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g	log CFU/g								CFU/ plate		
2018	6284	Fromage Selles sur Cher au lait cru	Raw milk cheese (Selles sur Cher)	100	>150			>150000	>5.18	100	>150		>150000	>5.18	>150000	>5.18	0.00	2	b	
				1000	>150					1000	>150									
2018	6297	Lait en poudre écrémé	Skimmed milk powder	10	0			<10	<1.00	10	0		<10	<1.00	<10	<1.00	0.00	2	c	
				100	0					100	0									
2018	6298	Lait en poudre écrémé	Skimmed milk powder	10	3			30	1.48*	10	2		20	1.30*	20	1.30*	0.00	2	c	
				100	0					100	0									
2018	6299	Lait en poudre entier	Milk powder	10	2			20	1.30*	10	0		<10	<1.00	<10	<1.00	0.00	2	c	
				100	0					100	0									
2018	6300	Lait en poudre entier	Milk powder	10	96			920	2.96	10	68		700	2.85	680	2.83	-0.01	2	c	
				100	5					100	9									
2018	6301	Lait en poudre écrémé	Skimmed milk powder	100	29			2900	3.46	100	18		1700	3.23	1800	3.26	0.02	2	c	
				1000	3					1000	1									

SEAFOOD 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		Interpretation 2025 Rep 1		Dilution	Rep 1	Rep 2	Interpretation 2025 Replicate 1		1 plate interpretation					
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g	log CFU/g				CFU/g	log CFU/g	CFU/g	log (CFU/g)	log(CFU/g) 1 plate – 2 plates			
2006	637	Gambas aux légumes	Ready to reheat prawns	100	32	41	31	55	3400	3.53	100	33	33	3000	3.48	3300	3.52	0.04	3	c	
				1000	5	7	6	6			1000	0	2								
2006	843	Terrine de saumon	Salmon terrine	10	14	13	9	7	150	2.18	10	9	11	82	1.91	90	1.95 Ne	0.04	3	c	
				100	2	2	2	2			100	0	1	Ne							
2006	1280	Salade Alaska	Deli salad	10000	25	23	26	47	250000	5.40	10000	122	76	1200000	6.08	1200000	6.08	0.00	3	c	
				100000	3	1	2	3			100000	10	10								
2006	1281	Saumon en dés	Salmon cubes	1000	14	9	16	19	14000	4.15	1000	75	74	76000	4.88	75000	4.88	-0.01	3	c	
				10000	1	0	3	1			10000	9	7								
2006	1282	Torti au surimi	Ready to eat pasta	100	63	53	65	69	6600	3.82	100	32	18	3400	3.53	3200	3.51	-0.03	3	c	
				1000	10	7	3	8			1000	5	2								
2006	1283	Cocktail de crevettes	Cooked shrimps	1000	17	21	13	18	17000	4.23	1000	39	26	39000	4.59	39000	4.59	0.00	3	c	
				10000	2	1	1	1			10000	4	6								
2006	1284	Surimi	Surimi	100	124	103	139	133	12000	4.08	1000	18	23	19000	4.28	18000	4.26	-0.02	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	11000	4.04	1000	37	26	39000	4.59	37000	4.57	-0.02	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	3.40	100	10	20	1000	3.00	1000	3.00	0.00	3	c	
				1000	3	3	9	3			1000	1	1								
2006	1342	Filet de loup de mer	Fish fillet	100	13	10	13	20	1500	3.18	100	10	7	910	2.96	1000	3.00	0.04	3	a	
				1000	3	2	1	5			1000	0	0								
2006	1343	Filet de dorade	Fish fillet	100	12	11	11	10	1300	3.11	100	12	11	1200	3.08	1200	3.08	0.00	3	a	
				1000	2	3	3	2			1000	1	1								
2006	1344	Filet Haddock fumé	Haddock fillet	100	14	8	10	10	1500	3.18	100	5	6	460	2.66	500	2.70 Ne	0.04	3	b	
				1000	2	0	1	2			1000	0	2	Ne							
2006	1345	Saumon fumé	Somed salmon	100	9	7	14	10	820	2.91	100	8	5	730	2.86	800	2.90 Ne	0.04	3	b	
				1000	0	1	0	0	Ne	1000	0	0	Ne								
2006	1650	Filets de saumon	Salmon fillet	100	56	42	48	45	5300	3.72	100	66	53	6400	3.81	6600	3.82	0.01	3	a	
				1000	2	2	4	4			1000	4	6								
2006	1651	Brochettes de saumon	Salmon skewers	10	151	128	137	149	1100	3.04	10	121	136	1300	3.11	1200	3.08	-0.03	3	a	
				100	11	18	13	14	100	18	22										
2006	1652	Sardines	Pilchards	10	1	2	3	2	10	1.00*	10	0	0	<10	<1.00	<10	<1.00	0.00	3	a	
				100	0	0	0	0			100	0	0								
2006	1653	Maquereau	Mackerel	10	0	0	0	0	<10	<1.00	10	1	0	10	1.00*	10	1.00*	0.00	3	a	
				100	0	0	0	0			100	0	0								
2006	1654	Terrine de St Jacques	Scallops terrine	100	>150	>150	>150	>150	130000	5.11	100	>150	>150	110000	5.04	110000	5.04	0.00	3	c	
				1000	129	130	116	151			1000	110	120								
2006	1655	Terrine de saumon	Salmon terrine	100	>150	>150	>150	>150	130000	5.11	100	>150	>150	140000	5.15	140000	5.15	0.00	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	150000	5.18	100	>150	>150	130000	5.11	130000	5.11	0.00	3	c	
				1000	148	141	148	136			1000	128	138								
2006	1657	Carpaccio de saumon	Salmon Carpaccio	1000	>150	>150	>150	>150	560000	5.75	1000	>150	>150	320000	5.51	320000	5.51	0.00	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	580000	5.76	1000	>150	>150	240000	5.38	240000	5.38	0.00	3	c	
				10000	58	28	46	45			10000	24	20								
2006	1659	Nems crabes crevettes	Ready to reheat seafood	1000	103	113	145	115	110000	5.04	1000	86	88	86000	4.93	86000	4.93	0.00	3	c	
				10000	15	19	13	19			10000	9	6								

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

SEAFOOD 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		Interpretation 2025 Rep 1		Dilution	Rep 1	Rep 2	Interpretation 2025 Replicate 1		1 plate interpretation				
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g	log CFU/g				CFU/g	log CFU/g	CFU/g	log (CFU/g)	log(CFU/g) 1 plate – 2 plates		
2006	1691	Terrine d'écrevisse à l'armoricaine	Crayfish terrine	100	34	36	36	39	3500	3.54	100	24	32	2500	3.40	2400	3.38	-0.02	3	c
				1000	4	7	6	8			1000	4	3							
2006	1692	Toast'n sea au saumon fumé	Salmon toasts	100	28	25	19	20	2900	3.46	100	13	17	1200	3.08	1300	3.11	0.03	3	b
				1000	4	2	5	2			1000	0	2							
2006	1693	Poisson sauce blanche	Ready to reheat fish	10	78	76	69	73	840	2.92	10	51	47	510	2.71	510	2.71	0.00	3	c
				100	14	10	9	10			100	5	7							
2011	2061	Nems au crabe	Crab nem	10	110				1100	3.04	10	74		730	2.86	740	2.87	0.01	3	c
				100	13						100	6								
2011	2122	Sandwich saumon fumé ciboulette	Sandwich (smoked salmon and chives)	1000	32				34000	4.53	1000	31		30000	4.48	31000	4.49	0.01	3	b
				10000	5						10000	2								
2011	2150	Salade de pâtes saumon mayonnaise	Pasta salad (Salmon and mayonnaise)	10	127				1300	3.11	10	72		700	2.85	720	2.86	0.01	3	c
				100	12						100	5								
2018	6169	Encornet rouge	Red squids	10	19				210	2.32	10	23		240	2.38	230	2.36	-0.02	3	a
				100	4						100	3								
2018	6170	Accras de morue	Cod fritters	10	0				<10	<1.00	10	0		<10	<1.00	<10	<1.00	0.00	3	c
				100	0						100	0								
2018	6279	Poisson plat préparé	Ready to reheat fish	100	>150				34000	4.53	100	>150		38000	4.58	38000	4.58	0.00	3	c
				1000	34						1000	38								
2018	6280	Plat cuisiné au saumon	Ready to reheat salmon	10	0				<10	<1.00	10	0		<10	<1.00	<10	<1.00	0.00	3	c
				100	0						100	0								
2018	6402	Homard Européen	Lobster	10	0				<10	<1.00	10	0		<10	<1.00	<10	<1.00	0.00	3	a
				100	0						100	0								
2018	6723	Filet de julienne	Fish fillet	10	>150				>15000	>4.18	10	>150		>15000	>4.18	>15000	>4.18	0.00	3	a
				100	>150						100	>150								
2018	6724	Filet de Merlan	Fish fillet	100	>150				>150000	>5.18	100	>150		17000	4.23	17000	4.23	0.00	3	a
				1000	>150						1000	17								
2018	6725	Bar	Fish	1000	>150				>1500000	>6.18	1000	36		40000	4.60	36000	4.56	-0.05	3	a
				10000	>150						10000	8								
2018	6726	Lamelles d'encornet géant	Squids	100	>150				130000	5.11	100	>150		21000	4.32	21000	4.32	0.00	3	a
				1000	125						1000	21								
2018	6727	Encornet criée	Squids	1000	61				65000	4.81	1000	51		49000	4.69	51000	4.71	0.02	3	a
				10000	10						10000	3								
2018	6728	Crevettes crues décortiquées	Raw shrimps	1000	69				72000	4.86	1000	34		35000	4.54	34000	4.53	-0.01	3	a
				10000	10						10000	4								
2018	6729	Noix de saint jacques	Scallops	1000	132				130000	5.11	1000	76		75000	4.88	76000	4.88	0.01	3	a
				10000	11						10000	6								

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		Interpretation 2025 Rep 1		Dilution	Rep 1	Rep 2	Interpretation 2025 Replicate 1		1 plate interpretation				
					CFU/plate a	CFU/plate b	CFU/plate a	CFU/plate b	CFU/g	log CFU/g				CFU/g	log CFU/g	CFU/g	log (CFU/g)			log(CFU/g) 1 plate – 2 plates
2006	593	Piémontaise	Deli salad (piémontaise)	10	6	5	4	4	55	1.74	10	3	5	30	1,48*	30	1,48*	0.00	4	c
				100	0	0	0	0		Ne	100	0	0							
2006	627	Choux de Bruxelles	Brussels sprouts	10	6	4	5	2	55	1.74	10	0	0	<10	<1.00	<10	<1.00	0.00	4	a
				100	0	0	0	0		Ne	100	0	0							
2006	629	Haricots verts	Green beans	10	2	3	0	2	20	1.30*	10	0	0	<10	<1.00	<10	<1.00	0.00	4	a
				100	0	0	0	0			100	0	0							
2006	630	Courgettes	Courgette	10	0	0	0	0	<10	<1.00	10	0	0	<10	<1.00	<10	<1.00	0.00	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	<1.00	10	0	0	<10	<1.00	<10	<1.00	0.00	4	b
				100	0	0	0	0			100	0	0							
2006	844	Carottes râpées	Grated carrots	10	17	23	15	9	160	2.20	10	4	5	36	1.56	40	1.60	0.05	4	c
				100	0	0	0	0			100	0	0		Ne		Ne			
2006	845	Céleri rémoulade	Deli salad (celery)	100	>150	>150	>150	>150	29000	4.46	100	>150	>150	22000	4.34	22000	4.34	0.00	4	c
				1000	29	18	25	14			1000	22	29							
2006	1275	Haricots verts	Green beans	100	>150	>150	>150	>150	25000	4.40	100	>150	>150	>150000	>5.18	>150000	>5.18	0.00	4	a
				1000	25	20	14	10			1000	>150	>150							
2006	1276	Julienne de légumes surgelée	Frozen vegetables mix	100	>150	>150	>150	>150	>150000	>5.18	100	>150	>150	>150000	>5.18	>150000	>5.18	0.00	4	b
				1000	>150	>150	>150	>150			1000	>150	>150							
2006	1277	Poivrons verts	Green pepper	100	>150	>150	>150	>150	41000	4.61	100	>150	>150	>150000	>5.18	>150000	>5.18	0.00	4	a
				1000	41	52	45	30			1000	>150	>150							
2006	1278	Chou cuit	Cooked cubage	10	8	8	9	11	91	1.96	10	19	13	170	2.23	190	2.28	0.05	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	>5.18	100	>150	>150	>150000	>5.18	>150000	>5.18	0.00	4	c
				1000	>150	>150	>150	>150			1000	>150	>150							
2006	1346	Salade mêlée	Salad	1000	>150	>150	>150	>150	390000	5.59	1000	>150	>150	260000	5.41	260000	5.41	0.00	4	a
				10000	39	20	43	31			10000	26	13							
2006	1347	Mélange crudités	Salad (vegetables mix)	1000	>150	>150	>150	>150	980000	5.99	1000	>150	>150	1000000	6.00	1000000	6.00	0.00	4	c
				10000	98	126	127	117			10000	101	75							
2006	1348	Courgette rondelles surgelées	Sliced courgette	100	4	6	9	7	460	2.66	100	1	3	100	2.00*	100	2.00*	0.00	4	b
				1000	1	0	0	0		Ne	1000	0	0							
2006	1349	Poêlée champêtre surgelée	Frozen vegetables mix	100	5	5	4	6	550	2.74	100	0	7	640	2.81	700	2.85	0.00	4	b
				1000	1	1	0	1		Ne	1000	0	0		Ne		Ne			
2006	1390	Poireaux coupés	Sliced links	1000	72	63	69	80	76000	4.88	1000	55	55	60000	4.78	55000	4.74	-0.04	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	630000	5.80	10000	79	73	780000	5.89	790000	5.90	0.01	4	b
				100000	5	7	23	15			100000	7	9							
2006	1392	Haricots verts	Green beans	1000	90	103	113	66	90000	4.95	1000	92	96	97000	4.99	92000	4.96	-0.02	4	a
				10000	19	10	15	13			10000	15	6							
2006	1393	Poireaux émincés	Sliced links	1000	70	64	65	61	71000	4.85	1000	73	70	73000	4.86	73000	4.86	0.00	4	a
				10000	8	10	11	19			10000	7	13							
2006	1394	Brocolis	Brocolis	1000	91	89	105	88	92000	4.96	1000	81	64	79000	4.90	81000	4.91	0.01	4	a
				10000	10	12	12	16			10000	6	11							
2011	2058	Ratatouille	Ratatouille	10	15				150	2.18	10	4		45	1.65	40	1.60	-0.05	4	c
				100	1						100	1			Ne		Ne			
2011	2060	Carottes en lamelles cuites	Cooked sliced carrots	10	42				440	2.64	100	19		2000	3.30	1900	3.28	-0.02	4	c
				100	6						1000	3								

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

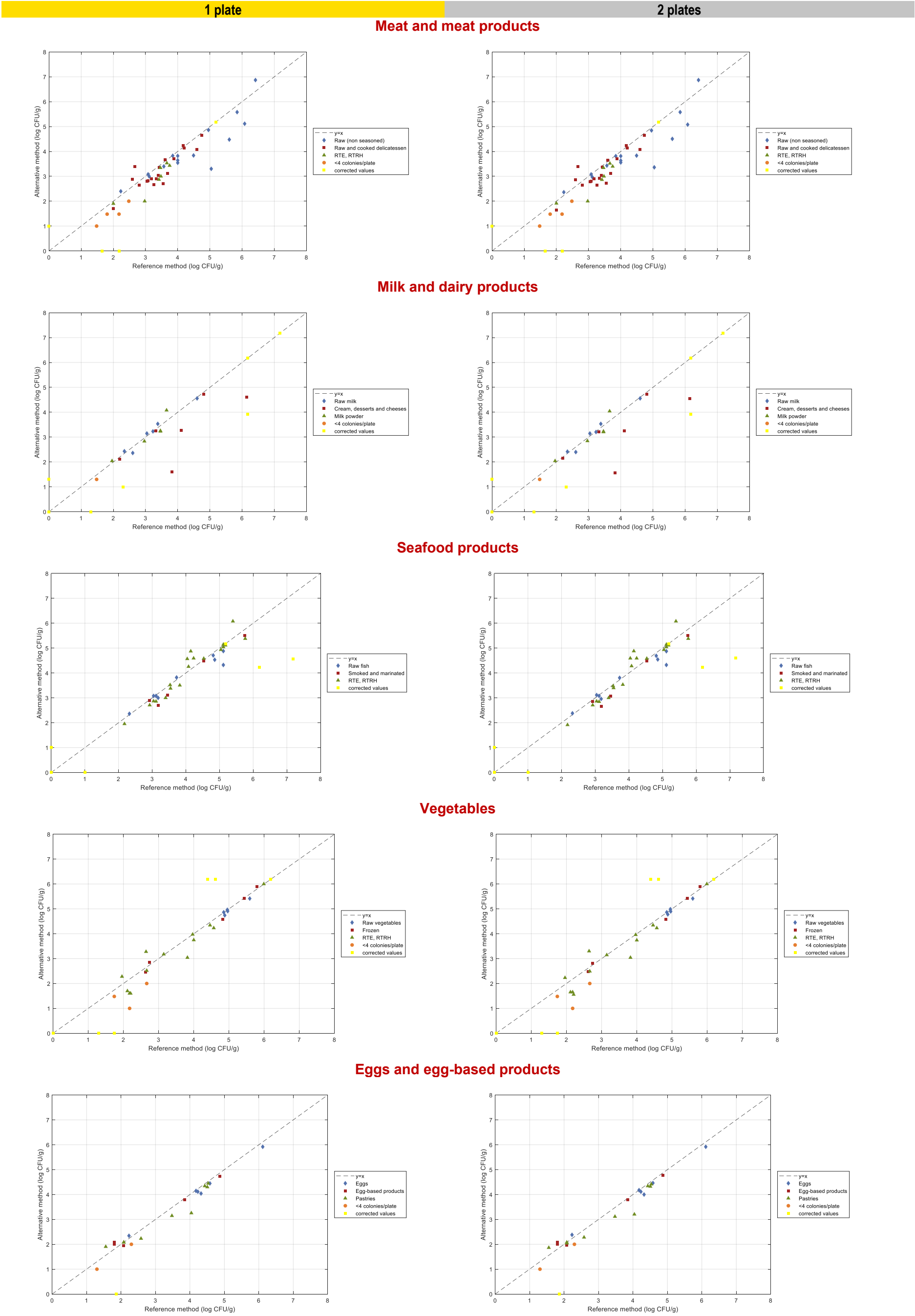
VEGETABLES																			
Analysis date	Sample N°	Product (French name)	Product	Reference method: ISO 4832*						Alternative method: CHROMID (COLI ID-F) for the enumeration of coliforms								Category	Type
				Dilution	Rep 1		Rep 2		Interpretation 2025 Rep 1		Enumeration		2 plates interpretation		1 plate interpretation				
					CFU/ plate a	CFU/ plate b	CFU/ plate a	CFU/ plate b	CFU/g	log CFU/g	Dilution	CFU/ plate	Rep 2 CFU/ plate	Interpretation 2025 Replicate 1		CFU/g	log CFU/g		
2011	2120	Ratatouille surgelée	Frozen ratatouille	10	42			420	2.62	10	29		300	2.48	290	2.46	-0.01	4	b
				100	4					100	4								
2011	2121	Salade boulghour légumes du soleil	Salad (boulghour and vegetables)	100	91			9300	3.97	100	94		9100	3.96	9400	3.97	0.01	4	c
				1000	11					1000	6								
2011	2123	Taboulé à l'orientale	Oriental tabouleh	10	13			150	2.18	10	1		10	1.00*	10	1.00*	0.00	4	c
				100	3					100	0								
2011	2148	Riz à la provençale thon basilic	Cooked rize (tuna and basil)	100	70			6600	3.82	100	11		1100	3.04	1100	3.04	0.00	4	c
				1000	3					1000	1								
2011	2149	Quiche aux légumes	Vegetables quiche	10	142			1400	3.15	10	145		1400	3.15	1500	3.18	0.03	4	c
				100	11					100	12								
2011	2183	Quiche aux poireaux surgelée	Frozen links quiche	1000	71			67000	4.83	1000	38		38000	4.58	38000	4.58	0.00	4	b
				10000	3					10000	4								
2011	2363	Salade carotte céleri	Carrots celery salad	10	43			460	2.66	10	33		310	2.49	330	2.52	0.03	4	c
				100	7					100	1								
2011	2365	Macédoine de légumes	Mixed vegetables	10	14			130	2.11	10	5		45	1.65	50	1.70	0.05	4	c
				100	0					100	0			Ne		Ne			
2011	2366	Macédoine de légumes	Mixed vegetables	100	>150			37000	4.57	100	>150		17000	4.23	17000	4.23	0.00	4	c
				1000	37					1000	17								
2011	2367	Tarte tomate poivron surgelée	Frozen tomato and pepper pie	1000	>150			270000	5.43	1000	>150		270000	5.43	270000	5.43	0.00	4	b
				10000	27					10000	27								
2011	2483	Piémontaise au jambon	Salad (Piémontaise)	100	101			10000	4.00	100	56		5500	3.74	5600	3.75	0.01	4	c
				1000	12					1000	5								

EGG AND EGG-BASED PRODUCTS

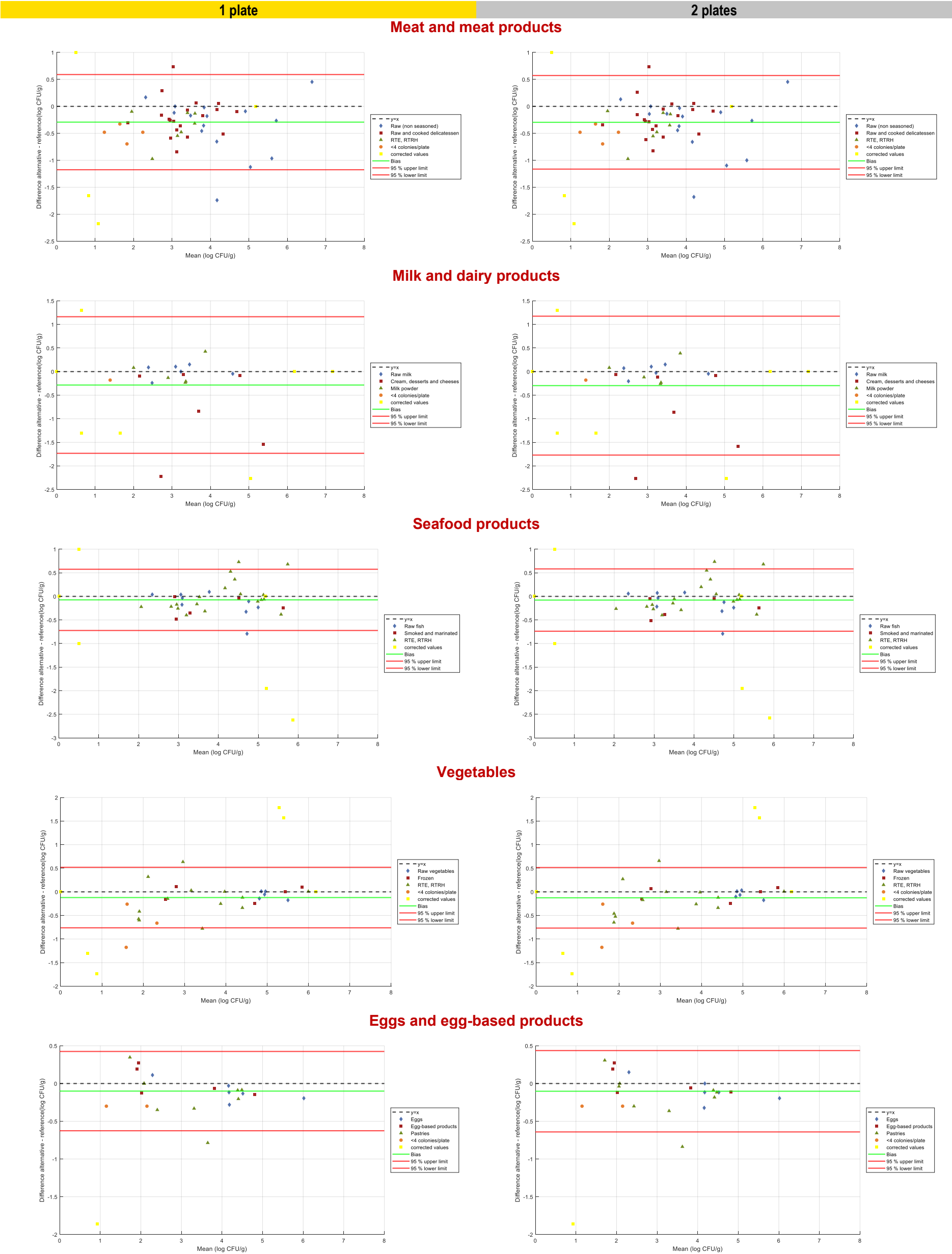
Analysis date	Sample N°	Product (French name)	Product	Reference method: ISO 4832*						Alternative method: CHROMID (COLI ID-F) for the enumeration of coliforms								Category	Type	
				Dilution	Rep 1		Rep 2		Interpretation 2025 Rep 1		Dilution	Rep 1	Rep 2	Interpretation 2025 Replicate 1		1 plate interpretation				
					CFU/plate a	CFU/plate b	CFU/plate a	CFU/plate b	CFU/g	log CFU/g				CFU/g	log CFU/g	CFU/g	log (CFU/g)			log(CFU/g) 1 plate – 2 plates
2006	587	Baba au rhum	Pastry	10	4	10	6	3	36	1.56	10	8	2	73	1.86	80	1.90	0.04	5	c
				100	0	0	0	0		Ne	100	0	0		Ne		Ne			
2006	588	Meringue chocolat	Meringue	10	6	7	8	9	64	1.81	10	12	20	120	2.08	120	2.08	0.00	5	b
				100	1	0	1	1		Ne	100	1	1							
2006	728	Coule d'œuf	Liquid egg product	1000	>150	>150	>150	>150	1300000	6.11	1000	>150	>150	830000	5.92	830000	5.92	0.00	5	a
				10000	127	122	105	108			10000	83	68							
2006	827	Coule d'œuf	Liquid egg product	10	19	16	14	9	170	2.23	10	22	19	240	2.38	220	2.34	-0.04	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	4.18	1000	14	17	15000	4.18	14000	4.15	-0.03	5	a
				10000	2	0	5	5			10000	2	3							
2006	1138	Œufs brouillés	Scrambled eggs	1000	22	22	37	28	21000	4.32	1000	11	12	10000	4.00	11000	4.04	0.04	5	a
				10000	1	3	8	3			10000	0	2							
2006	1139	Coule d'œuf	Liquid egg product	1000	41	47	46	54	38000	4.58	1000	28	35	29000	4.46	28000	4.45	-0.02	5	a
				10000	1	4	10	6			10000	4	4							
2006	1140	Coule d'œuf	Liquid egg product	1000	18	16	27	23	17000	4.23	1000	13	24	13000	4.11	13000	4.11	0.00	5	a
				10000	1	2	2	4			10000	1	2							
2006	1141	Eclair au chocolat	Pastry	1000	30	20	22	15	32000	4.51	1000	20	20	21000	4.32	20000	4.30	-0.02	5	c
				10000	5	3	1	1			10000	3	2							
2006	1142	Eclair au café	Pastry	1000	28	24	23	37	27000	4.43	1000	22	19	22000	4.34	22000	4.34	0.00	5	c
				10000	2	5	4	1			10000	2	1							
2006	1144	Flan noix de coco	Egg based dessert	100	2	1	0	1	200	2.30*	100	1	0	100	2.00*	100	2.00*	0.00	5	b
				1000	0	0	0	0			1000	0	0							
2006	1291	Chou à la crème	Pastry	100	111	100	88	71	11000	4.04	100	18	17	1600	3.20	1800	3.26	0.05	5	c
				1000	6	9	12	7			1000	0	0							
2006	1292	Crêpes	Pancakes	10	12	8	14	9	120	2.08	10	9	10	91	1.96	90	1.95	0.00	5	b
				100	1	2	1	0			100	1	1		Ne		Ne			
2006	1293	Crêpes	Pancakes	10	7	7	9	8	64	1.81	10	10	14	100	2.00	100	2.00	0.00	5	b
				100	0	1	2	3		Ne	100	1	3							
2011	2062	Tartelette cocktail	Cocktail pie	10	34				380	2.58	10	17		190	2.28	170	2.23	-0.05	5	c
				100	8						100	4								
2011	2063	Tartelette cocktail	Cocktail pie	100	31				3000	3.48	100	14		1300	3.11	1400	3.15	0.03	5	c
				1000	2						1000	0								
2011	2064	Tartelette fraise	Strawberries pie	1000	35				34000	4.53	1000	28		26000	4.41	28000	4.45	0.03	5	c
				10000	2						10000	1								
2018	6171	Tarte aux fraises	Pastry	10	11				120	2.08	10	12		120	2.08	120	2.08	0.00	5	c
				100	2						100	1								
2018	6278	Quiche lorraine	Quiche lorraine	10	2				20	1.30*	10	1		10	1.00*	10	1.00*	0.00	5	b
				100	0						100	0								
2018	6281	Tarte aux fraises	Pastry	10	7				73	1.86	10	0		<10	<1.00	<10	<1.00	0.00	5	c
				100	1					Ne	100	0								
2018	6282	Pâtisserie aux fruits	Pastry	10	12				120	2.08	10	12		110	2.04	120	2.08	0.04	5	c
				100	1						100	0								
2018	6730	Mayonnaise fraiche	Mayonnaise	100	69				7100	3.85	100	61		6200	3.79	6100	3.79	-0.01	5	b
				1000	9						1000	7								
2018	6731	Tortilla espagnole aux oignons	Tortilla with onions	1000	81				75000	4.88	1000	54		58000	4.76	54000	4.73	-0.03	5	b
				10000	2						10000	10								

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

Appendix 5 - Relative trueness study: data plotted for each category



Appendix 6 - Relative trueness study: Bland-Altman difference plot for each category



Appendix 7 - Accuracy profile study: raw data

ISO 7218 (2024) changes		Chosen plate for interpretation		Values in red: dilution inconsistency or above the quantification limit (not taken into account)										
Matrix	Strain	Level	Sample N°	Reference method: ISO 4832*				Alternative method: CHROMID Coli (COLI ID-F) for the enumeration of coliforms 37°C						
								Enumeration		2 plates interpretation		1 plate interpretation		
				Dilution	CFU/plate	CFU/g	log CFU/g	Dilution	CFU/plate	CFU/g	log CFU/g	CFU/g	log(CFU/g)	log(CFU/g) 1 plate - 2 plates
Ground beef Batch 1 Aerobic mesophilic flora: 2.1x10 ⁴ CFU/g	Klebsiella oxytoca 42	1	7468	10	19	190	2.28	10	17	160	2.20	170	2.23	0.03
				100	2			100	1					
			7469	10	28	280	2.45	10	28	260	2.41	280	2.45	0.03
				100	3			100	1					
			7470	10	27	270	2.43	10	17	160	2.20	170	2.23	0.03
				100	3			100	1					
		2	7471	10	21	210	2.32	10	21	200	2.30	210	2.32	0.02
				100	2			100	1					
			7472	10	30	290	2.46	10	12	140	2.15	120	2.08	-0.07
				100	2			100	3					
			7473	100	34	3600	3.56	100	25	2500	3.40	2500	3.40	0.00
				1000	6			1000	2					
		3	7474	100	44	4400	3.64	100	43	4100	3.61	4300	3.63	0.02
				1000	4			1000	2					
			7475	100	42	4100	3.61	100	32	3100	3.49	3200	3.51	0.01
				1000	3			1000	2					
			7476	100	46	4500	3.65	100	38	3600	3.56	3800	3.58	0.02
				1000	3			1000	2					
		4	7477	100	48	4800	3.68	100	29	2800	3.45	2900	3.46	0.02
				1000	5			1000	2					
			7478	1000	77	75000	4.88	1000	88	91000	4.96	88000	4.94	-0.01
				10000	6			10000	12					
			7479	1000	73	73000	4.86	1000	67	62000	4.79	67000	4.83	0.03
				10000	7			10000	1					
Ground beef Batch 2 Aerobic mesophilic flora: 3.8x10 ³ CFU/g	Klebsiella oxytoca 42	1	7483	10	21	200	2.30	10	23	240	2.38	230	2.36	-0.02
				100	1			100	3					
			7484	10	12	130	2.11	10	27	260	2.41	270	2.43	0.02
				100	2			100	2					
			7485	10	29	290	2.46	10	25	250	2.40	250	2.40	0.00
				100	3			100	2					
		2	7486	10	11	120	2.08	10	39	360	2.56	390	2.59	0.03
				100	2			100	1					
			7487	10	21	210	2.32	10	20	200	2.30	200	2.30	0.00
				100	2			100	2					
			7488	100	20	2200	3.34	100	25	2500	3.40	2500	3.40	0.00
				1000	4			1000	2					
		3	7489	100	37	3500	3.54	100	39	3700	3.57	3900	3.59	0.02
				1000	2			1000	2					
			7490	100	43	4200	3.62	100	31	3000	3.48	3100	3.49	0.01
				1000	3			1000	2					
			7491	100	30	3100	3.49	100	40	4000	3.60	4000	3.60	0.00
				1000	4			1000	4					
		4	7492	100	38	3700	3.57	100	27	2600	3.41	2700	3.43	0.02
				1000	3			1000	2					
			7493	1000	66	66000	4.82	1000	54	51000	4.71	54000	4.73	0.02
				10000	7			10000	2					
			7494	1000	73	70000	4.85	1000	73	69000	4.84	73000	4.86	0.02
				10000	4			10000	3					
		5	7495	1000	61	61000	4.79	1000	87	82000	4.91	87000	4.94	0.03
				10000	6			10000	3					
			7496	1000	80	78000	4.89	1000	57	56000	4.75	57000	4.76	0.01
				10000	6			10000	5					
			7497	1000	71	74000	4.87	1000	65	64000	4.81	65000	4.81	0.01
				10000	10			10000	5					

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

Matrix	Strain	Level	Sample N°	Reference method: ISO 4832*				Alternative method: CHROMID Coli (COLI ID-F) for the enumeration of coliforms 37°C						
				Enumeration				2 plates interpretation		1 plate interpretation				log(CFU/g) 1 plate - 2 plates
				Dilution	CFU/plate	CFU/g	log CFU/g	Dilution	CFU/plate	CFU/g	log CFU/g	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	220	2.34	0.02
				100	4			100	1					
			6642	10	37	380	2.58	10	31	310	2.49	310	2.49	0.00
				100	5			100	3					
			6643	10	23	240	2.38	10	35	330	2.52	350	2.54	0.03
				100	3			100	1					
			6644	10	39	370	2.57	10	24	220	2.34	240	2.38	0.04
				100	2			100	0					
			6645	10	35	360	2.56	10	21	250	2.40	210	2.32	-0.08
				100	4			100	6					
		2	6646	100	49	5400	3.73	100	39	4000	3.60	3900	3.59	-0.01
				1000	10			1000	5					
			6647	100	47	5100	3.71	100	27	2800	3.45	2700	3.43	-0.02
				1000	9			1000	4					
			6648	100	42	4500	3.65	100	45	4200	3.62	4500	3.65	0.03
				1000	7			1000	1					
			6649	100	48	5300	3.72	100	35	3500	3.54	3500	3.54	0.00
				1000	10			1000	4					
			6650	100	63	6800	3.83	100	52	5200	3.72	5200	3.72	0.00
				1000	12			1000	5					
		3	6651	1000	106	110000	5.04	1000	86	85000	4.93	86000	4.93	0.01
				10000	16			10000	7					
			6652	1000	101	100000	5.00	1000	95	95000	4.98	95000	4.98	0.00
				10000	11			10000	10					
			6653	1000	103	110000	5.04	1000	74	75000	4.88	74000	4.87	-0.01
				10000	16			10000	9					
			6654	1000	103	100000	5.00	1000	75	74000	4.87	75000	4.88	0.01
				10000	7			10000	6					
			6655	1000	119	120000	5.08	1000	97	93000	4.97	97000	4.99	0.02
				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	180	2.26	0.05
				100	2			100	0					
			6657	10	35	350	2.54	10	29	260	2.41	290	2.46	0.05
				100	3			100	0					
			6658	10	45	460	2.66	10	23	230	2.36	230	2.36	0.00
				100	6			100	2					
			6659	10	29	310	2.49	10	34	340	2.53	340	2.53	0.00
				100	5			100	3					
			6660	10	44	470	2.67	10	30	280	2.45	300	2.48	0.03
				100	8			100	1					
		2	6661	100	61	6000	3.78	100	47	4500	3.65	4700	3.67	0.02
				1000	5			1000	2					
			6662	100	60	5900	3.77	100	41	4500	3.65	4100	3.61	-0.04
				1000	5			1000	8					
			6663	100	65	6200	3.79	100	48	4500	3.65	4800	3.68	0.03
				1000	3			1000	2					
			6664	100	62	6100	3.79	100	38	4000	3.60	3800	3.58	-0.02
				1000	5			1000	6					
			6665	100	65	6800	3.83	100	33	3300	3.52	3300	3.52	0.00
				1000	10			1000	3					
		3	6666	1000	126	130000	5.11	1000	95	100000	5.00	95000	4.98	-0.02
				10000	12			10000	16					
			6667	1000	108	110000	5.04	1000	101	96000	4.98	100000	5.00	0.02
				10000	9			10000	5					
			6668	1000	103	110000	5.04	1000	92	91000	4.96	92000	4.96	0.00
				10000	19			10000	8					
			6669	1000	118	120000	5.08	1000	104	110000	5.04	100000	5.00	-0.04
				10000	17			10000	12					
			6670	10000	10	100000	5.00	1000	96	95000	4.98	96000	4.98	0.00
				100000	1			10000	8					

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Matrix	Strain	Level	Sample N°	Reference method: ISO 4832*				Alternative method: CHROMID Coli (COLI ID-F) for the enumeration of coliforms 37°C						
								Enumeration		2 plates interpretation		1 plate interpretation		
				Dilution	CFU/plate	CFU/g	log CFU/g	Dilution	CFU/plate	CFU/g	log CFU/g	CFU/g	log(CFU/g)	log(CFU/g) 1 plate - 2 plates
Raw fish Batch 1 Aerobic mesophilic flora: 1.4x10 ³ CFU/g	Enterobacter cloacae Ad230	1	6817	10	32	310	2.49	10	19	220	2.34	190	2.28	-0.06
				100	2			100	5					
			6818	10	38	370	2.57	10	21	230	2.36	210	2.32	-0.04
				100	3			100	4					
			6819	10	26	270	2.43	10	32	310	2.49	320	2.51	0.01
				100	4			100	2					
		2	6820	10	28	270	2.43	10	22	220	2.34	220	2.34	0.00
				100	2			100	2					
			6821	10	24	240	2.38	10	14	160	2.20	140	2.15	-0.06
				100	2			100	3					
			6822	100	29	3500	3.54	100	32	3100	3.49	3200	3.51	0.01
				1000	9			1000	2					
			6823	100	41	4100	3.61	100	35	3400	3.53	3500	3.54	0.01
				1000	4			1000	2					
			6824	100	59	5600	3.75	100	43	4300	3.63	4300	3.63	0.00
				1000	3			1000	4					
		3	6825	100	47	4700	3.67	100	28	2900	3.46	2800	3.45	-0.02
				1000	5			1000	4					
			6826	100	37	3600	3.56	100	35	3600	3.56	3500	3.54	-0.01
				1000	3			1000	5					
			6827	1000	73	78000	4.89	1000	69	68000	4.83	69000	4.84	0.01
				10000	13			10000	6					
			6828	1000	112	120000	5.08	1000	81	78000	4.89	81000	4.91	0.02
				10000	21			10000	5					
			6829	1000	61	61000	4.79	1000	59	58000	4.76	59000	4.77	0.01
				10000	6			10000	5					
Raw fish Batch 2 Aerobic mesophilic flora: 2.4x10 ³ CFU/g	Enterobacter cloacae Ad230	1	6832	10	30	280	2.45	10	30	340	2.53	300	2.48	-0.05
				100	1			100	7					
			6833	10	27	260	2.41	10	29	260	2.41	290	2.46	0.05
				100	1			100	0					
			6834	10	21	200	2.30	10	25	260	2.41	250	2.40	-0.02
				100	1			100	3					
		2	6835	10	25	260	2.41	10	26	240	2.38	260	2.41	0.03
				100	3			100	0					
			6836	10	28	280	2.45	10	19	190	2.28	190	2.28	0.00
				100	3			100	2					
			6837	100	39	3700	3.57	100	44	4500	3.65	4400	3.64	-0.01
				1000	2			1000	6					
			6838	100	43	4200	3.62	100	42	4000	3.60	4200	3.62	0.02
				1000	3			1000	2					
			6839	100	44	4500	3.65	100	48	4300	3.63	4800	3.68	0.05
				1000	5			1000	4					
		3	6840	100	44	4200	3.62	100	33	3300	3.52	3300	3.52	0.00
				1000	2			1000	3					
			6841	100	49	4700	3.67	100	23	2400	3.38	2300	3.36	-0.02
				1000	3			1000	3					
			6842	1000	80	82000	4.91	1000	86	83000	4.92	86000	4.93	0.02
				10000	10			10000	5					
			6843	1000	93	93000	4.97	1000	61	64000	4.81	61000	4.79	-0.02
				10000	9			10000	9					
			6844	1000	74	75000	4.88	1000	78	75000	4.88	78000	4.89	0.02
				10000	8			10000	5					
			6845	1000	100	96000	4.98	1000	76	74000	4.87	76000	4.88	0.01
				10000	6			10000	5					
			6846	1000	82	84000	4.92	1000	64	66000	4.82	64000	4.81	-0.01
				10000	10			10000	9					

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Matrix	Strain	Level	Sample N°	Reference method: ISO 4832*				Alternative method: CHROMID Coli (COLI ID-F) for the enumeration of coliforms 37°C						
				Enumeration		2 plates interpretation		1 plate interpretation						
				Dilution	CFU/plate	CFU/g	log CFU/g	Dilution	CFU/plate	CFU/g	log CFU/g	CFU/g	log(CFU/g)	log(CFU/g) 1 plate - 2 plates
Grated carrots Batch 1 Aerobic mesophilic flora: 8.0x10 ⁴ CFU/g	<i>Escherichia coli</i> 19	1	6536	10	38	360	2.56	10	26	250	2.40	260	2.41	0.02
				100	1			100	1					
			6537	10	21	220	2.34	10	30	280	2.45	300	2.48	0.03
				100	3			100	1					
			6538	10	33	300	2.48	10	21	190	2.28	210	2.32	0.04
				100	0			100	0					
		2	6539	10	45	440	2.64	10	40	400	2.60	400	2.60	0.00
				100	3			100	0					
			6540	10	29	290	2.46	10	36	340	2.53	360	2.56	0.02
				100	3			100	1					
			6541	100	46	4600	3.66	100	34	3500	3.54	3400	3.53	-0.01
				1000	5			1000	4					
		3	6542	100	48	4600	3.66	100	38	3600	3.56	3800	3.58	0.02
				1000	3			1000	2					
			6543	100	41	4500	3.65	100	37	3500	3.54	3700	3.57	0.02
				1000	9			1000	2					
			6544	100	55	5500	3.74	100	56	5600	3.75	5600	3.75	0.00
				1000	5			1000	6					
		3	6545	100	53	5400	3.73	100	37	3900	3.59	3700	3.57	-0.02
				1000	6			1000	6					
			6546	1000	71	72000	4.86	1000	67	65000	4.81	67000	4.83	0.01
				10000	8			10000	4					
			6547	1000	54	60000	4.78	1000	52	51000	4.71	52000	4.72	0.01
				10000	12			10000	4					
		3	6548	1000	67	70000	4.85	1000	68	67000	4.83	68000	4.83	0.01
				10000	10			10000	6					
			6549	1000	87	86000	4.93	1000	82	80000	4.90	82000	4.91	0.01
				10000	8			10000	6					
			6550	1000	84	82000	4.91	1000	68	67000	4.83	68000	4.83	0.01
				10000	6			10000	6					
Grated carrots Batch 2 Aerobic mesophilic flora: 800 CFU/g	<i>Escherichia coli</i> 19	1	6551	10	41	430	2.63	10	28	260	2.41	280	2.45	0.03
				100	6			100	0					
			6552	10	34	360	2.56	10	40	390	2.59	400	2.60	0.01
				100	5			100	3					
			6553	10	29	270	2.43	10	34	330	2.52	340	2.53	0.01
				100	1			100	2					
		2	6554	10	25	260	2.41	10	30	290	2.46	300	2.48	0.01
				100	4			100	2					
			6555	10	44	470	2.67	10	33	310	2.49	330	2.52	0.03
				100	8			100	1					
			6556	100	39	4100	3.61	100	54	5500	3.74	5400	3.73	-0.01
				1000	6			1000	7					
		3	6557	100	41	4300	3.63	100	53	5400	3.73	5300	3.72	-0.01
				1000	6			1000	6					
			6558	100	47	4600	3.66	100	44	4300	3.63	4400	3.64	0.01
				1000	4			1000	3					
			6559	100	39	3700	3.57	100	26	2800	3.45	2600	3.41	-0.03
				1000	2			1000	5					
		3	6560	100	57	5800	3.76	100	45	4200	3.62	4500	3.65	0.03
				1000	7			1000	1					
			6561	1000	86	86000	4.93	1000	80	79000	4.90	80000	4.90	0.01
				10000	9			10000	7					
			6562	1000	75	74000	4.87	1000	77	71000	4.85	77000	4.89	0.04
				10000	6			10000	1					
			6563	1000	80	81000	4.91	1000	82	80000	4.90	82000	4.91	0.01
				10000	9			10000	6					
			6564	1000	51	50000	4.70	1000	50	47000	4.67	50000	4.70	0.03
				10000	4			10000	2					
			6565	1000	91	91000	4.96	1000	61	58000	4.76	61000	4.79	0.02
				10000	9			10000	3					

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

Matrix	Strain	Level	Sample N°	Reference method: ISO 4832*				Alternative method: CHROMID Coli (COLI ID-F) for the enumeration of coliforms 37°C						
				Enumeration				2 plates interpretation		1 plate interpretation				log(CFU/g) 1 plate - 2 plates
				Dilution	CFU/plate	CFU/g	log CFU/g	Dilution	CFU/plate	CFU/g	log CFU/g	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	130	2.11	-0.03
				100	2			100	2					
			6018	10	18	170	2.23	10	30	310	2.49	300	2.48	-0.01
				100	1			100	4					
			6019	10	16	180	2.26	10	30	280	2.45	300	2.48	0.03
				100	4			100	1					
		2	6020	10	30	300	2.48	10	25	280	2.45	250	2.40	-0.05
				100	3			100	6					
			6021	10	23	250	2.40	10	32	310	2.49	320	2.51	0.01
				100	4			100	2					
			6022	100	20	2000	3.30	100	39	3600	3.56	3900	3.59	0.03
				1000	2			1000	1					
			6023	100	25	2500	3.40	100	49	4500	3.65	4900	3.69	0.04
				1000	3			1000	1					
			6024	100	31	3200	3.51	100	28	2700	3.43	2800	3.45	0.02
				1000	4			1000	2					
		3	6025	100	41	3900	3.59	100	50	4700	3.67	5000	3.70	0.03
				1000	2			1000	2					
			6026	100	39	3600	3.56	100	35	3600	3.56	3500	3.54	-0.01
				1000	1			1000	5					
			6027	1000	20	19000	4.28	1000	20	18000	4.26	20000	4.30	0.05
				10000	1			10000	0					
			6028	1000	67	65000	4.81	1000	79	74000	4.87	79000	4.90	0.03
				10000	4			10000	2					
			6029	1000	63	64000	4.81	1000	54	55000	4.74	54000	4.73	-0.01
				10000	7			10000	7					
			6030	1000	76	71000	4.85	1000	75	77000	4.89	75000	4.88	-0.01
				10000	2			10000	10					
			6031	1000	66	68000	4.83	1000	78	79000	4.90	78000	4.89	-0.01
				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	210	2.32	0.00
				100	4			100	2					
			6033	10	34	350	2.54	10	30	300	2.48	300	2.48	0.00
				100	4			100	3					
			6034	10	26	250	2.40	10	30	330	2.52	300	2.48	-0.04
				100	1			100	6					
		2	6035	10	23	250	2.40	10	33	310	2.49	330	2.52	0.03
				100	4			100	1					
			6036	10	23	230	2.36	10	28	280	2.45	280	2.45	0.00
				100	2			100	3					
			6037	100	15	1500	3.18	100	27	2600	3.41	2700	3.43	0.02
				1000	1			1000	2					
			6038	100	28	2600	3.41	100	25	2500	3.40	2500	3.40	0.00
				1000	1			1000	2					
			6039	100	38	3500	3.54	100	38	4100	3.61	3800	3.58	-0.03
				1000	1			1000	7					
			6040	100	37	3700	3.57	100	34	3200	3.51	3400	3.53	0.03
				1000	4			1000	1					
		3	6041	100	43	4500	3.65	100	35	3700	3.57	3500	3.54	-0.02
				1000	6			1000	6					
			6042	1000	31	32000	4.51	1000	45	43000	4.63	45000	4.65	0.02
				10000	4			10000	2					
			6043	1000	65	62000	4.79	1000	44	43000	4.63	44000	4.64	0.01
				10000	3			10000	3					
			6044	1000	47	48000	4.68	1000	90	87000	4.94	90000	4.95	0.01
				10000	6			10000	6					
			6045	1000	50	46000	4.66	1000	65	69000	4.84	65000	4.81	-0.03
				10000	1			10000	11					
			6046	1000	53	52000	4.72	1000	91	89000	4.95	91000	4.96	0.01
				10000	4			10000	7					

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

Appendix 8 - Accuracy profile study: summarized results

1 plate

(Food) Category 1			Category 1									
(Food) Type 1			Ground beef-1 plate									
			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	170	280	170	210	120
7483-7487	Ground beef	1	200	130	290	120	210	230	270	250	390	200
7473-7477	Ground beef	2	3600	4400	4100	4500	4800	2500	4300	3200	3800	2900
7488-7492	Ground beef	2	2200	3500	4200	3100	3700	2500	3900	3100	4000	2700
7478-7482	Ground beef	3	75000	73000	70000	78000	79000	88000	67000	87000	88000	77000
7493-7497	Ground beef	3	66000	70000	61000	78000	74000	54000	73000	87000	57000	65000
(Food) Category 3			Category 3									
(Food) Type 3			Raw fish-1 plate									
			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	190	210	320	220	140
6832-6836	Raw fish	1	280	260	200	260	280	300	290	250	260	190
6822-6826	Raw fish	2	3500	4100	5600	4700	3600	3200	3500	4300	2800	3500
6837-6841	Raw fish	2	3700	4200	4500	4200	4700	4400	4200	4800	3300	2300
6827-6831	Raw fish	3	78000	120000	61000	100000	75000	69000	81000	59000	87000	68000
6842-6846	Raw fish	3	82000	93000	75000	96000	84000	86000	64000	75000	74000	66000
(Food) Category 5			Category 5									
(Food) Type 5			Eggs (Liquid egg product)-1 plate									
			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	130	300	300	250	320
6032-6036	Liquid egg product	1	260	350	250	250	230	210	300	300	300	280
6022-6026	Liquid egg product	2	2000	2500	3200	3900	3600	3900	4900	2800	5000	3500
6037-6041	Liquid egg product	2	1500	2600	3500	3700	4500	2700	2500	3800	3400	3500
6027-6031	Liquid egg product	3	19000	65000	64000	71000	68000	20000	79000	54000	75000	78000
6042+6046	Liquid egg product	3	32000	62000	48000	46000	52000	45000	44000	90000	65000	91000

(Food) Category 2			Category 2									
(Food) Type 2			Dairy dessert-1 plate									
			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	220	310	350	240	210
6656-6660	Dairy dessert	1	150	350	460	310	470	180	290	230	3400	300
6646-6650	Dairy dessert	2	5400	5100	4500	5300	6800	3900	2700	4500	3500	5200
6661-6665	Dairy dessert	2	6000	5900	6200	6100	6800	4700	4100	4800	3800	3300
6651-6655	Dairy dessert	3	110000	100000	110000	100000	120000	86000	95000	74000	75000	97000
6666-6670	Dairy dessert	3	130000	110000	110000	120000	100000	95000	100000	92000	100000	96000
(Food) Category 4			Category 4									
(Food) Type 4			Grated carrots-1 plate									
			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	260	300	210	400	360
6551-6555	Grated carrots	1	430	360	270	260	470	280	400	340	300	330
6541-6545	Grated carrots	2	4600	4600	4500	5500	5400	3400	3800	3700	5600	3700
6556-6560	Grated carrots	2	4100	4300	4600	3700	5800	5400	5300	4400	2600	4500
6546-6550	Grated carrots	3	72000	60000	70000	86000	82000	67000	52000	68000	82000	68000
6561-6565	Grated carrots	3	86000	74000	81000	50000	91000	80000	77000	82000	50000	61000

2 plates

(Food) Category 1			Category 1									
(Food) Type 1			Ground beef-2 plates									
			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 3			Category 3									
(Food) Type 3			Raw fish-2 plates									
			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 5			Category 5									
(Food) Type 5			Eggs (Liquid egg product)-2 plates									
			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

(Food) Category 2			Category 2									
(Food) Type 2			Dairy dessert-2 plates									
			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 4			Category 4									
(Food) Type 4			Grated carrots-2 plates									
			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	400	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

Appendix 9 – 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 blue
						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♦		BLVB	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<0.5 mm 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	Edwardsiella	tarda	CIP 78.61T	Unknown	12 (-7)	18 (-7)	col<0.5 mm pink	/	4 (-7)	white
						11 (-7)	15 (-7)			1 (-7)	
	7	Pectobacterium	carotovorum	CIP 82.83T	Potatoes	1 (-7)	1 (-7)	col<0.5 mm 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<0.5 mm 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<0.5 mm pink	/	<1 (-7)	/	
					12 (-7)	16 (-7)			<1 (-7)		
13	Providencia	stuartii	Adria 46	Turkey leg	18 (-7)	28 (-7)	col<0.5 mm 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<0.5 mm 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 (<0.5 mm)	-	<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 (<0.5 mm) pale	-	<1 (-7)	/
	29	Proteus	mirabilis	Ad639	Mayonnaise	108 (-7)	89 (-7)	NC (<0.5 mm)	-	<1 (-7)	/
	30	Yersinia	enterocolitica	Ad1028	Pork (speck)	54 (-7)	49 (-7)	C	-	51	beige

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

**Appendix 10 - Results obtained by the collaborative laboratories
and the expert laboratory**

Collaborator	N° sample	Reference method: ISO 4832					Alternative method: CHROMID Coli - Coliforms			
		Dilution	CFU/ plate a	CFU/ plate b	CFU/mL (rounded)	Log CFU/mL (2025)	Dilution	CFU/ plate	CFU/mL (rounded)	Log CFU/mL (2025)
A	A1	1	/	/	<10	<1.00	1	/	<10	<1.00
		10	0	0			10	0		
	A7	1	/	/	<10	<1.00	1	/	<10	<1.00
		10	0	0			10	0		
	A2	1	/	/	100	2.00	1	/	80	1.90 Ne
		10	10	5			10	8		
	A5	1	/	/	60	1.78 Ne	1	/	50	1.70 Ne
		10	6	3			10	5		
	A3	10	73	58	730	2.86	10	75	750	2.88
		100	7	6			100	7		
	A8	10	79	69	800	2.90	10	61	640	2.81
		100	9	7			100	9		
	A4	100	63	53	6300	3.80	100	66	6600	3.82
		1000	6	6			1000	7		
	A6	100	58	58	6100	3.79	100	81	8200	3.91
		1000	9	5			1000	9		
B	B1	1	0	0	<1	<0.00	1	0	<1	<0.00
		10	0	0			10	0		
	B7	1	0	0	<1	<0.00	1	0	<1	<0.00
		10	0	0			10	0		
	B2	1	91	68	90	1.95	1	95	94	1.97
		10	8	7			10	8		
	B5	1	77	103	75	1.88	1	80	81	1.91
		10	6	12			10	9		
	B3	10	107	95	1000	3.00	10	101	1000	3.00
		100	5	5			100	10		
	B8	10	105	100	1000	3.00	10	74	730	2.86
		100	7	10			100	6		
	B4	100	114	119	11000	4.04	100	111	11000	4.04
		1000	11	11			1000	10		
	B6	100	91	100	8900	3.95	100	93	9400	3.97
		1000	7	9			1000	10		
C	C1	10	0	0	<10	<1.00	10	0	<10	<1.00
		100	0	0			100	0		
	C7	10	0	0	<10	<1.00	10	0	<10	<1.00
		100	0	0			100	0		
	C2	10	4	12	55	1.74 Ne	10	8	73	1.86 Ne
		100	2	1			100	0		
	C5	10	10	11	100	2.00	10	5	45	1.65 Ne
		100	1	0			100	0		
	C3	10	72	78	760	2.88	10	53	530	2.72
		100	11	6			100	5		
	C8	10	75	67	770	2.89	10	72	720	2.86
		100	10	10			100	7		
	C4	100	83	99	8100	3.91	100	77	7800	3.89
		1000	6	4			1000	9		
	C6	100	83	87	8500	3.93	100	70	7100	3.85
		1000	10	12			1000	8		

Collaborator	N° sample	Reference method: ISO 4832					Alternative method: CHROMID Coli - Coliforms			
		Dilution	CFU/plate a	CFU/plate b	CFU/mL (rounded)	Log CFU/mL (2025)	Dilution	CFU/plate	CFU/mL (rounded)	Log CFU/mL (2025)
D	D1	10	0	0	<10	<1.00	10	0	<10	<1.00
		100	0	0			100	0		
	D7	10	0	0	<10	<1.00	10	0	<10	<1.00
		100	0	0			100	0		
	D2	10	6	2	55	1.74 Ne	10	9	82	1.91 Ne
		100	0	0			100	0		
	D5	10	3	7	70	1.85 Ne	10	9	91	1.96 Ne
		100	0	0			100	1		
	D3	10	73	85	760	2.88	10	78	790	2.90
		100	10	12			100	9		
	D8	10	74	61	740	2.87	10	70	660	2.82
		100	7	4			100	2		
	D4	100	57	66	5800	3.76	100	74	7400	3.87
		1000	7	9			1000	7		
	D6	100	77	90	7300	3.86	100	59	5700	3.76
		1000	3	7			1000	4		
E	E1	1	0	0	<1	<0.00	1	0	<1	<0.00
		10	0	0			10	0		
	E7	1	0	0	<1	<0.00	1	0	<1	<0.00
		10	0	0			10	0		
	E2	1	67	83	65	1.81	1	97	93	1.97
		10	4	12			10	5		
	E5	1	84	70	83	1.92	1	63	63	1.80
		10	7	7			10	6		
	E3	10	120	89	1200	3.08	10	93	920	2.96
		100	4	4			100	8		
	E8	10	77	65	770	2.89	10	85	840	2.92
		100	8	10			100	7		
	E4	100	89	101	8900	3.95	100	67	6800	3.83
		1000	9	11			1000	8		
	E6	100	77	86	8100	3.91	100	98	9500	3.98
		1000	12	11			1000	7		
F	F1	1	0	0	<1	<0.00	1	0	<1	<0.00
		10	0	0			10	0		
	F7	1	0	0	<1	<0.00	1	0	<1	<0.00
		10	0	0			10	0		
	F2	1	73	83	74	1.87	1	81	85	1.93
		10	8	12			10	13		
	F5	1	87	77	84	1.92	1	75	76	1.88
		10	5	11			10	9		
	F3	10	116	120	1200	3.08	10	98	1000	3.00
		100	13	9			100	13		
	F8	10	75	92	740	2.87	10	76	750	2.88
		100	6	7			100	6		
	F4	100	122	106	12000	4.08	100	71	7100	3.85
		1000	11	14			1000	7		
	F6	100	129	128	13000	4.11	100	86	8800	3.94
		1000	24	10			1000	11		

Collaborator	N° sample	Reference method: ISO 4832					Alternative method: CHROMID Coli - Coliforms			
		Dilution	CFU/plate a	CFU/plate b	CFU/mL (rounded)	Log CFU/mL (2025)	Dilution	CFU/plate	CFU/mL (rounded)	Log CFU/mL (2025)
G	G1	10	0	0	<10	<1.00	10	0	<10	<1.00
		100	0	0			100	0		
	G7	10	0	0	<10	<1.00	10	0	<10	<1.00
		100	0	0			100	0		
	G2	10	5	5	45	1.65	10	5	55	1.74
		100	0	0			100	1		
	G5	10	2	13	20	1.30	10	12	110	2.04
		100	1	0			100	0		
	G3	10	75	76	740	2.87	10	56	550	2.74
		100	6	11			100	4		
	G8	10	67	63	690	2.84	10	57	580	2.76
		100	9	8			100	7		
	G4	100	78	59	8200	3.91	100	60	5800	3.76
		1000	12	7			1000	4		
	G6	100	85	73	8500	3.93	100	68	6900	3.84
		1000	8	10			1000	8		
H	H1	1	0	0	<1	<0.00	1	0	<1	<0.00
		10	0	0			10	0		
	H7	1	0	0	<1	<0.00	1	0	<1	<0.00
		10	0	0			10	0		
	H2	1	80	64	78	1.89	1	61	61	1.79
		10	6	5			10	6		
	H5	1	80	76	78	1.89	1	57	60	1.78
		10	6	5			10	9		
	H3	10	62	79	620	2.79	10	83	810	2.91
		100	6	7			100	6		
	H8	10	77	69	800	2.90	10	77	750	2.88
		100	11	8			100	5		
	H4	100	79	83	7900	3.90	100	80	8000	3.90
		1000	8	11			1000	8		
	H6	100	91	75	8800	3.94	100	87	8500	3.93
		1000	6	5			1000	6		
I	I1	1	0	0	<1	<0.00	1	0	<1	<0.00
		10	0	0			10	0		
	I7	1	0	0	<1	<0.00	1	0	<1	<0.00
		10	0	0			10	0		
	I2	1	61	86	63	1.80	1	73	73	1.86
		10	8	5			10	7		
	I5	1	88	77	85	1.93	1	84	85	1.93
		10	6	9			10	10		
	I3	10	106	91	1100	3.04	10	88	900	2.95
		100	10	9			100	11		
	I8	10	100	101	1000	3.00	10	79	810	2.91
		100	10	8			100	10		
	I4	100	105	103	11000	4.04	100	100	9700	3.99
		1000	11	10			1000	7		
	I6	100	102	111	10000	4.00	100	86	8500	3.93
		1000	8	13			1000	8		

Collaborator	N° sample	Reference method: ISO 4832					Alternative method: CHROMID Coli - Coliforms			
		Dilution	CFU/plate a	CFU/plate b	CFU/mL (rounded)	Log CFU/mL (2025)	Dilution	CFU/plate	CFU/mL (rounded)	Log CFU/mL (2025)
J	J1	1	0	0	<1	<0.00	1	0	<1	<0.00
		10	0	0			10	0		
	J7	1	0	0	<1	<0.00	1	0	<1	<0.00
		10	0	0			10	0		
	J2	1	63	69	65	1.81	1	62	65	1.81
		10	8	13			10	10		
	J5	1	63	74	61	1.79	1	66	69	1.84
		10	4	8			10	10		
	J3	10	78	95	770	2.89	10	76	770	2.89
		100	7	10			100	9		
	J8	10	73	79	680	2.83	10	78	800	2.90
		100	2	7			100	10		
	J4	100	67	82	6500	3.81	100	83	8300	3.92
		1000	5	7			1000	8		
	J6	100	81	87	7700	3.89	100	84	8100	3.91
		1000	4	6			1000	5		
K	K1	10	0	0	<10	<1.00	10	0	<10	<1.00
		100	0	0			100	0		
	K7	10	0	0	<10	<1.00	10	0	<10	<1.00
		100	0	0			100	0		
	K2	10	10	13	100	2.00	10	8	82	1.91
		100	1	0			100	1		
	K5	10	7	9	73	1.86	10	5	45	1.65
		100	1	1			100	0		
	K3	10	59	93	650	2.81	10	71	710	2.85
		100	12	7			100	7		
	K8	10	90	64	860	2.93	10	73	750	2.88
		100	5	6			100	9		
	K4	100	70	93	7500	3.88	100	83	8400	3.92
		1000	12	9			1000	9		
	K6	100	70	74	7200	3.86	100	77	7800	3.89
		1000	9	4			1000	9		
L	L1	10	0	0	<10	<1.00	10	0	<10	<1.00
		100	0	0			100	0		
	L7	10	0	0	<10	<1.00	10	0	<10	<1.00
		100	0	0			100	0		
	L2	10	14	13	150	2.18	10	11	100	2.00
		100	2	0			100	0		
	L5	10	4	12	36	1.56	10	8	82	1.91
		100	0	1			100	1		
	L3	10	91	86	930	2.97	10	62	630	2.80
		100	11	9			100	7		
	L8	10	56	68	580	2.76	10	76	790	2.90
		100	8	7			100	11		
	L4	100	82	86	8100	3.91	100	75	7500	3.88
		1000	7	11			1000	8		
	L6	100	74	77	7200	3.86	100	85	8700	3.94
		1000	5	6			1000	11		

Collaborator	N° sample	Reference method: ISO 4832					Alternative method: CHROMID Coli - Coliforms			
		Dilution	CFU/plate a	CFU/plate b	CFU/mL (rounded)	Log CFU/mL (2025)	Dilution	CFU/plate	CFU/mL (rounded)	Log CFU/mL (2025)
M	M1	1	0	0	<1	<0.00	1	0	<1	<0.00
		10	0	0			10	0		
	M7	1	0	0	<1	<0.00	1	0	<1	<0.00
		10	0	0			10	0		
	M2	1	73	71	75	1.88	1	71	71	1.85
		10	9	6			10	7		
	M5	1	60	79	60	1.78	1	64	66	1.82
		10	6	1			10	9		
	M3	10	77	89	760	2.88	10	80	820	2.91
		100	7	10			100	10		
	M8	10	72	71	710	2.85	10	80	780	2.89
		100	6	6			100	6		
	M4	100	92	69	9400	3.97	100	97	9600	3.98
		1000	11	11			1000	9		
	M6	100	90	93	8900	3.95	100	85	8500	3.93
		1000	8	9			1000	9		
N	N1	1	0	0	<1	<0.00	1	0	<1	<0.00
		10	0	0			10	0		
	N7	1	0	0	<1	<0.00	1	0	<1	<0.00
		10	0	0			10	0		
	N2	1	70	70	75	1.88	1	73	73	1.86
		10	13	6			10	7		
	N5	1	72	78	71	1.85	1	65	65	1.81
		10	6	11			10	6		
	N3	10	76	100	790	2.90	10	80	820	2.91
		100	11	8			100	10		
	N8	10	68	82	710	2.85	10	95	930	2.97
		100	10	12			100	7		
	N4	100	113	80	11000	4.04	100	91	9000	3.95
		1000	8	12			1000	8		
	N6	100	96	97	9600	3.98	100	90	9000	3.95
		1000	10	7			1000	9		

Collaborator	N° sample	Reference method: ISO 4832*					Alternative method: CHROMID Coli - Coliforms				
		Dilution	CFU/ plate a	CFU/ plate b	CFU/mL (rounded)	Log CFU/mL (2025)	Dilution	CFU/ plate	CFU/mL (rounded)	Log CFU/mL (2025)	
ADRIA	O1	1	0	0	<1	<0.00	1	0	<1	<0.00	
		10	0	0			10	0			
	O7	1	0	0	<1	<0.00	1	0	<1	<0.00	
		10	0	0			10	0			
	O2	1	80	107	83	1.92	1	81	83	1.92	
		10	11	8			10	10			
	O5	1	93	80	93	1.97	1	68	70	1.85	
		10	9	2			10	9			
	O3	10	100	60	970	2.99	10	81	790	2.90	
		100	7	6			100	6			
	O8	10	54	62	510	2.71	10	63	660	2.82	
		100	2	4			100	10			
	O4	100	101	89	10000	4.00	100	78	7700	3.89	
		1000	11	8			1000	7			
	O6	100	76	73	7700	3.89	100	81	8400	3.92	
		1000	9	13			1000	11			

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