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NF VALIDATION
Validation of alternative analytical methods
Application in food microbiology

Summary report

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

3M™ Petrifilm™ High-Sensitivity Coliform Count plate

(Certificate number: 3M 01/07 - 03/99)

for the enumeration of coliforms in all human food products

Quantitative method

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This report consists of 59 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◆.

Version 0
16 March 2023

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

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 realized according to the EN ISO 16140-2:2016 and the AFNOR technical rules (PR Revision 7).

Validation protocols	▪ ISO 16140-1 (2016): Microbiology of the food chain - Method validation — *Part 1: Vocabulary* ▪ ISO 16140-2 (2016): Microbiology of the food chain - Method validation — *Part 2: Protocol for the validation of alternative (proprietary) methods against a reference method* ▪ AFNOR technical rules (PR Revision 7)
Reference method♦	NF ISO 4831 (October 2006) - Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of coliforms - Most probable number technique
Alternative method	**3M™ Petrifilm™ High-Sensitivity Coliform Count plate**
Scope	**All human food products**
Certification organization	AFNOR Certification (http://nf-validation.afnor.org/)

♦ Analyses performed according to the COFRAC accreditation

1 INTRODUCTION

The **3M™ Petrifilm™ High-Sensitivity Coliform Count plate** was validated for the enumeration of gas producing coliforms in March 1999 (certificate number: 3M 01/07 - 03/99) for all human food products.
The different validations are listed below:

Date	Study	Reference method	Validation standard
March 1999	Initial validation study	ISO 4831 (1991)	/
April 2003	Renewal study	ISO 4831 (1991)	/
May 2007	Renewal study *In 2007, additional samples were tested for the meat and egg products categories in order to fulfill the ISO 16140 (2003) and the AFNOR Technical rules.*	ISO 4831 (2006)	ISO 16140 (2003)
February 2011	Renewal study	ISO 4831 (2006)	ISO 16140 (2003)
November 2014	Renewal study	ISO 4831 (2006)	ISO 16140 (2003)
January 2019	Renewal study	ISO 4831 (2006)	ISO 16140-2 (2016)
February 2023	Renewal study	ISO 4831 (2006)	ISO 16140-2 (2016)

2 METHODS DESCRIPTION

2.1 Alternative method

2.1.1 Principle

The 3M™ Petrifilm™ High-Sensitivity Coliform Count (HSCC) plate is a ready to use culture medium system, which contains modified Violet Red Bile (VRB) nutrients, a cold-water-soluble gelling agent, and a tetrazolium indicator that facilitates colony enumeration. Petrifilm HSCC plates are useful for the enumeration of low levels of coliform bacteria in the food industries. A 5-mL sample is plated onto one plate. This allows a 1-coliform-per-gram sensitivity if a 1:5 dilution of product is made. A 2-coliform-per-gram sensitivity is achieved if a 1:10 dilution is used.

2.1.2 Protocol

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

2.1.3 Restrictions

There is no restriction for use.

2.2 Reference method◆

The reference method corresponds to the NF ISO 4831 (October 2006) - Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of coliforms - Most probable number technique (See **Appendix 2**).

2.3 Protocols applied during the initial validation and the renewal study

The shortest incubation time of the Petrifilm tests was applied: 22 h.

3 INITIAL VALIDATION, EXTENSION/RENEWAL STUDIES: RESULTS

3.1 Method comparison study

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

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

3.1.1 Relative trueness 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.

◆ Analysis performed according to the COFRAC accreditation

3.1.1.1 Number and nature of the samples

Five categories were tested with a minimum of 15 interpretable results per category and 5 per type. 144 samples were tested for the initial validation study in 1999, 23 samples for the extension in 2007 and 27 for the renewal study in 2018.
Taking into account all the studies, the repartition per tested category and type is provided in Table 1

Table 1 – Categories and types

Category		Type		Number of samples tested				Number of samples with interpretable results by both methods			
				1999	2007	2018	Total	1999	2007	2018	Total
1	Meat products	a	Raw meat	6	0	0	6	5	0	0	5
		b	Delicatessen	15	12	0	27	9	5	0	14
		c	RTE, RTRH	16	0	0	16	12	0	0	12
Total				37	12	0	49	26	5	0	31
2	Dairy products	a	Liquid milk (raw and pasteurized) and milk powder	1	0	8	9	0	0	5	5
		b	Cheeses	10	0	1	11	4	0	1	5
		c	Ice-cream, cream, butter	7	0	2	9	6	0	0	6
Total				18	0	11	29	10	0	6	16
3	Seafood	a	Raw	10	0	0	10	5	0	0	5
		b	Smoked, marinated	3	0	13	16	0	0	5	5
		c	RTE, RTRH	15	0	0	15	5	0	0	5
Total				28	0	13	41	10	0	5	15
4	Egg products	a	Egg products	8	7	0	15	6	7	0	13
		b	Pastries	11	2	0	13	9	0	0	9
		c	RTE	2	2	3	7	2	2	1	5
Total				21	11	3	35	17	9	1	27
5	Vegetables and others	a	RTC	14	0	0	14	9	0	0	9
		b	RTRH	9	0	0	9	6	0	0	6
		c	Low moisture products	17	0	0	17	5	0	0	5
Total				40	0	0	40	20	0	0	20
All categories				**144**	**23**	**27**	**194**	**83**	**14**	**12**	**109**

194 samples were analyzed, leading to 109 exploitable results.

3.1.1.2 Artificial and natural contamination of the samples

For the studies performed in 1997 and 2007, all the samples were naturally contaminated. For the renewal study run in 2018, 23 samples were artificially contaminated using seeding or spiking protocols; 10 gave interpretable results by both methods.

Injury treatments and injury efficiencies, i.e. enumerations differences between selective and non-selective media, are presented hereafter (See **Appendix 3**).

99 samples giving interpretable results were naturally contaminated and 10 samples were artificially contaminated.

90.8 % of the samples were naturally contaminated.

3.1.1.3 Raw data

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

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

The data are classified in four categories (See Table 2):

- 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 $\log_{10}$ 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 log unit. These results are not included in the calculations but also appear on the graphs.
- Samples with no result (ND): no positive tube with the ISO 4831 or too much colonies on Petrifilm to be enumerated.

Table 2 - Classification of the data

Category		Type		Number of samples tested	Number of interpretable results by both methods	Number of samples with no result (ND)	Number of samples with less than 4 colonies /plate	Number of samples below or above the quantification limit
1	Meat products	a	Raw meat	6	5	1	0	0
		b	Delicatessen	27	14	1	1	11
		c	RTE, RTRH	16	12	0	2	2
Total				49	31	2	3	13
2	Dairy products	a	Liquid milk (raw and pasteurized) and milk powder	9	5	2	0	2
		b	Cheeses	11	5	1	0	5
		c	Ice-cream, cream, butter	9	6	1	0	2
Total				29	16	4	0	9
3	Seafood	a	Raw	10	5	0	0	5
		b	Smoked, marinated	16	5	4	0	7
		c	RTE, RTRH	15	5	3	2	4
Total				41	15	7	2	16
4	Egg products	a	Egg products	15	13	0	1	1
		b	Pastries	13	9	0	2	2
		c	RTE	7	5	0	0	2
Total				35	27	0	3	5
5	Vegetables and others	a	RTC	14	9	2	2	1
		b	RTRH	9	6	1	2	0
		c	Low moisture products	17	5	0	1	11
Total				40	20	3	5	12
All categories				**194**	**109**	**16**	**14**	**55**

The samples, which were not used in the calculations, are provided in Table 3.

Table 3 - Samples which were not used in the calculations

Year of analysis	Sample N°	Product	ISO 4831♦	3M Petrifilm HSCC	Category	Type
1999	100	Raw duck gizzard	3,04	ND	1	a
1999	1	White pudding	1,32	>4,48	1	b
1999	9	Duck pâté	2,04	>4,48	1	b
1999	58	Ham	>3,04	3,86	1	b
1999	85	Ham	ND (no positive tube)	>3,48	1	b
1999	88	Cooked pork meat	>3,04	3,11	1	b
1999	146	Patties with tomatoes	-0,04	<0,30	1	b
2007	300	Diced ham	<1,48	3,76	1	b
2007	301	Rillettes	<2,48	3,90	1	b
2007	369	Pâté en croûte	<0,48	0,30*	1	b
2007	370	Cooked roast pork	1,04	0,60*	1	b
2007	732	Pâté	<0,48	2,00	1	b
2007	733	Liver pâté	<0,48	2,20	1	b
2007	734	Chorizo	1,63	<0,30	1	b
1999	8	Ravioli with nuts	1,96	<2,30	1	c
1999	17	Cooked pork meat	<0.48	<0,30	1	c
1999	30	Ready to reheat	0,36	0,60*	1	c
1999	145	Cooked beef meat	0,18	0,30*	1	c
1999	15	Raw milk	>3.04	4,02	2	a
2018	**7691**	**Pasteurized half skimmed milk**	<0,5	3,38	2	a
2018	**7692**	**Pasteurized half skimmed milk**	3,63	ND	2	a
2018	**7694**	**Skimmed milk powder**	1,95	ND	2	a
1999	35	Brie (cheese)	0,56	<1,30	2	b
1999	92	Cheese	1,56	<1,30	2	b
1999	94	Cheese	1,96	<3,30	2	b
1999	95	Cheese	0,56	<1,30	2	b
1999	96	Cheese	0,18	<2,30	2	b
1999	98	Cheese	3,63	ND	2	b
1999	60	Frozen nougat	<-0,52	<0,30	2	c
2018	7697	Roquefort (raw ewe milk cheese)	<0,50	<0,30	2	c
2018	7698	Camembert (raw cow milk cheese)	ND (no positive tube)	>4,48	2	c
1999	34	Raw and frozen shrimps with garlic and herbs	>3,04	4,01	3	a
1999	38	Frozen raw shrimps	-0,13	<0,30	3	a
1999	47	Raw fish	2,38	<1,30	3	a
1999	48	Raw fish	1,38	<1,30	3	a
1999	53	Raw fish	0,97	<1,30	3	a
1999	50	Smoked salmon	>3,04	4,00	3	b
1999	52	Smoked salmon	>4,04	4,13	3	b
1999	163	Smoked Haddock	ND (no positive tube)	0,26*	3	b
2018	**7683**	**Smoked herring**	ND (no positive tube)	3,51	3	b
2018	**7684**	**Smoked salmon**	ND (no positive tube)	4,64	3	b
2018	**7685**	**Marinated anchovy (garlic, capers, parsley)**	ND (no positive tube)	5,36	3	b
2018	**7686**	**Smoked mackerel**	<0,50	<0,30	3	b
2018	**7687**	**Marinated smoked salmon (dill-lemon)**	<0,50	<0,30	3	b
2018	**7688**	**Marinated cuttlefish (garlic-parsley)**	<0,50	<1,30	3	b

♦ Analyses performed according to the COFRAC accreditation

Year of analysis	Sample N°	Product	ISO 4831♦	3M Petrifilm HSCC	Category	Type
2018	**8282**	**Smoked salmon**	<0,5	3,57	3	b
2018	**8283**	**Smoked haddock**	<0,5	4,64	3	b
1999	6	Pizza with salmon	0,56	0,30*	3	c
1999	11	Cooked fish	<0.48	<0,30	3	c
1999	18	Cooked shrimps	0,56	<0,30	3	c
1999	51	Cooked fish	>4,04	5,06	3	c
1999	87	Cooked fish	ND (no positive tube)	ND	3	c
1999	108	Frozen precooked seafood	0,36	0,60*	3	c
1999	159	Frozen cooked shrimps	-0,04	0,30*	3	c
1999	164	Prawn fritters	ND (no positive tube)	0,60*	3	c
1999	165	Crayfish terrine	1,48	<1,30	3	c
1999	168	Stuffed scallops	ND (no positive tube)	0,30*	3	c
1999	153	Mayonnaise	>3,04	3,22	4	a
1999	155	Pudding	0,36	0,30*	4	a
1999	101	Pastry with pastry cream	0,63	0,30*	4	b
1999	102	Pastry with pastry cream	1,86	<3,30	4	b
2007	214	Paris-Brest (French pastry)	3,18	<1,30	4	b
2007	377	Pastry	1,36	0,30*	4	b
2018	**7689**	**Omelet with onions**	0,60	<0,30	4	c
2018	**7690**	**Omelet**	0,60	<0,30	4	c
1999	74	Frozen cooked zucchini	0,58	0,30*	5	a
1999	76	Frozen cooked vegetables	>3,04	1,60	5	a
1999	79	Frozen cooked broccoli	ND(tubes broken)	0,60*	5	a
1999	82	Frozen cooked broccoli	-0,04	<0,30	5	a
1999	112	Frozen cooked vegetables	1,18	0,78*	5	a
1999	78	Frozen cooked vegetables	ND(tubes broken)	2,09	5	b
1999	135	Frozen cooked vegetables	0,36	0,30*	5	b
1999	137	Frozen cooked vegetables	0,18	0,78*	5	b
1999	4	Flour	<1,55	<1,30	5	c
1999	5	Flour	<1,55	<1,30	5	c
1999	19	Cardamom	-0,13	0,30*	5	c
1999	20	Chinese spices	1,18	<2,30	5	c
1999	26	Filled chocolate	-0,44	<0,30	5	c
1999	33	Flour	0,56	<1,30	5	c
1999	45	Linden (for infusion)	1,38	<2,30	5	c
1999	83	Flour	-0,44	<1,30	5	c
1999	125	Green anise (spice)	<0,48	2,30	5	c
1999	128	Fennel (spice)	<-0,52	<0,30	5	c
1999	131	Black pepper	0,63	<1,30	5	c
1999	132	Sesam (seeds)	0,36	<1,30	5	c

3.1.1.4 Statistical interpretation

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

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

The Figures 1 to 5 show the data plotted for each individual category.

The Figure 6 shows the data plotted for all the products.

Figure 1 - Data plotted for Meat products

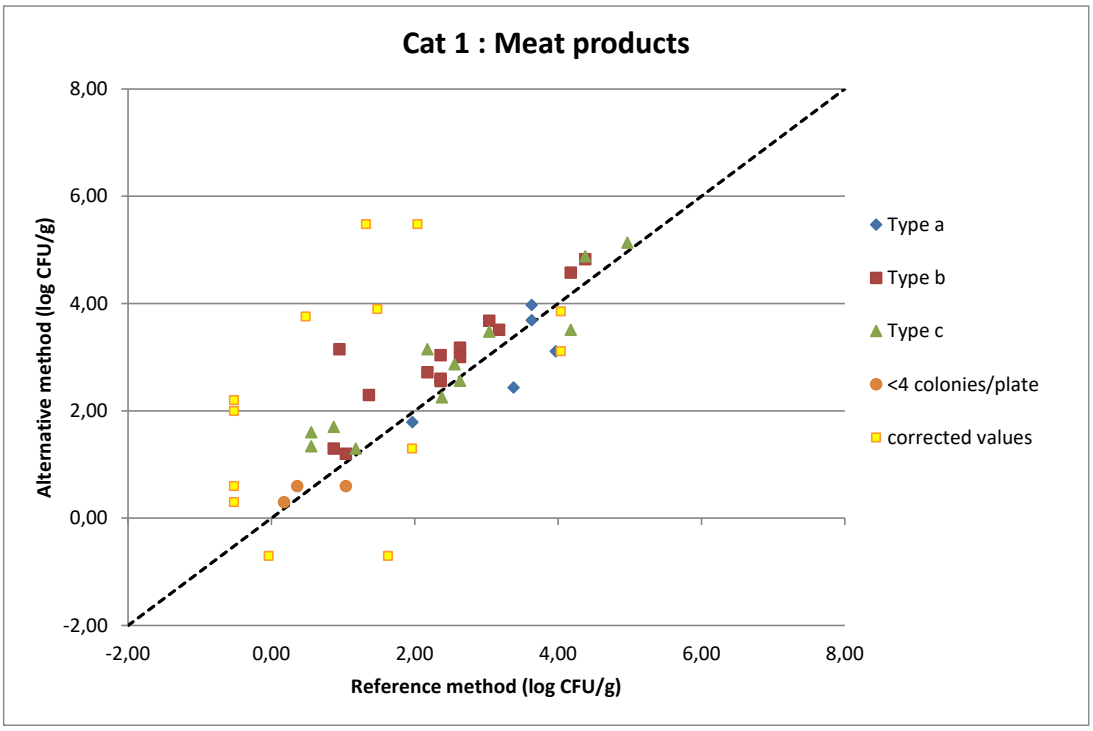


Figure 2 - Data plotted for Dairy products

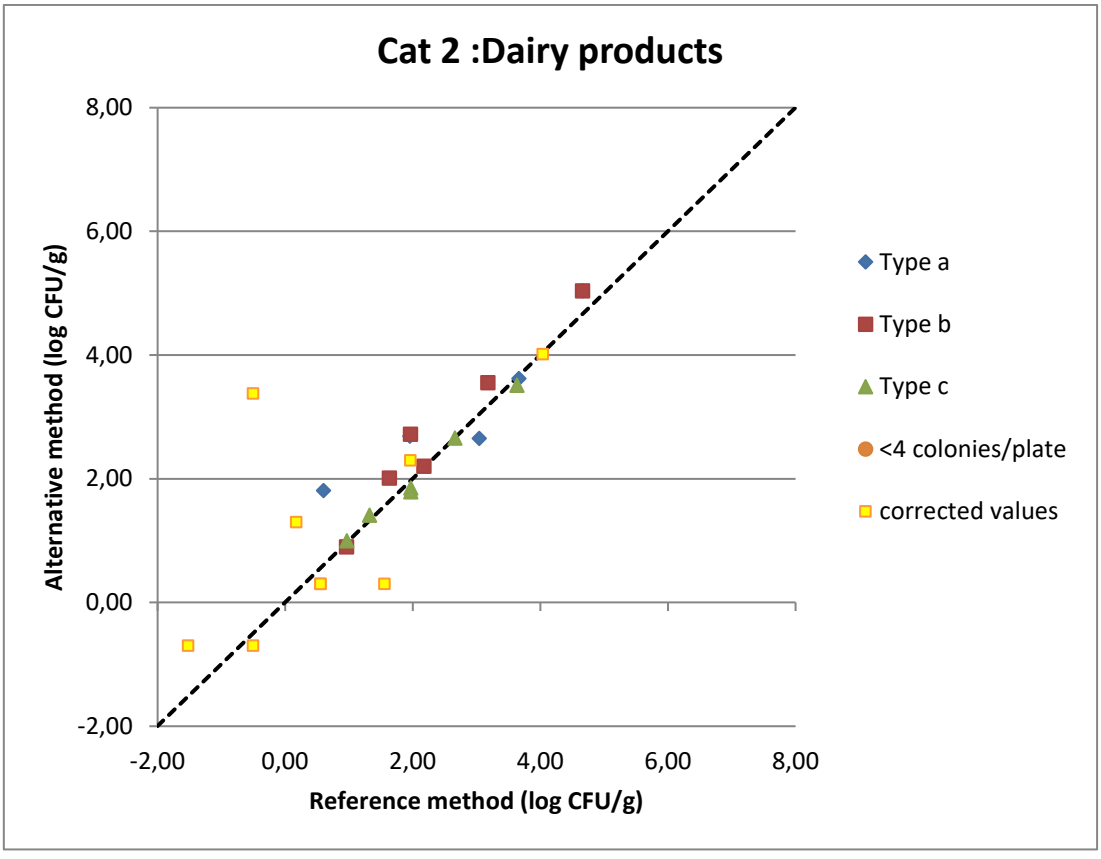


Figure 3 - Data plotted for **Seafood**

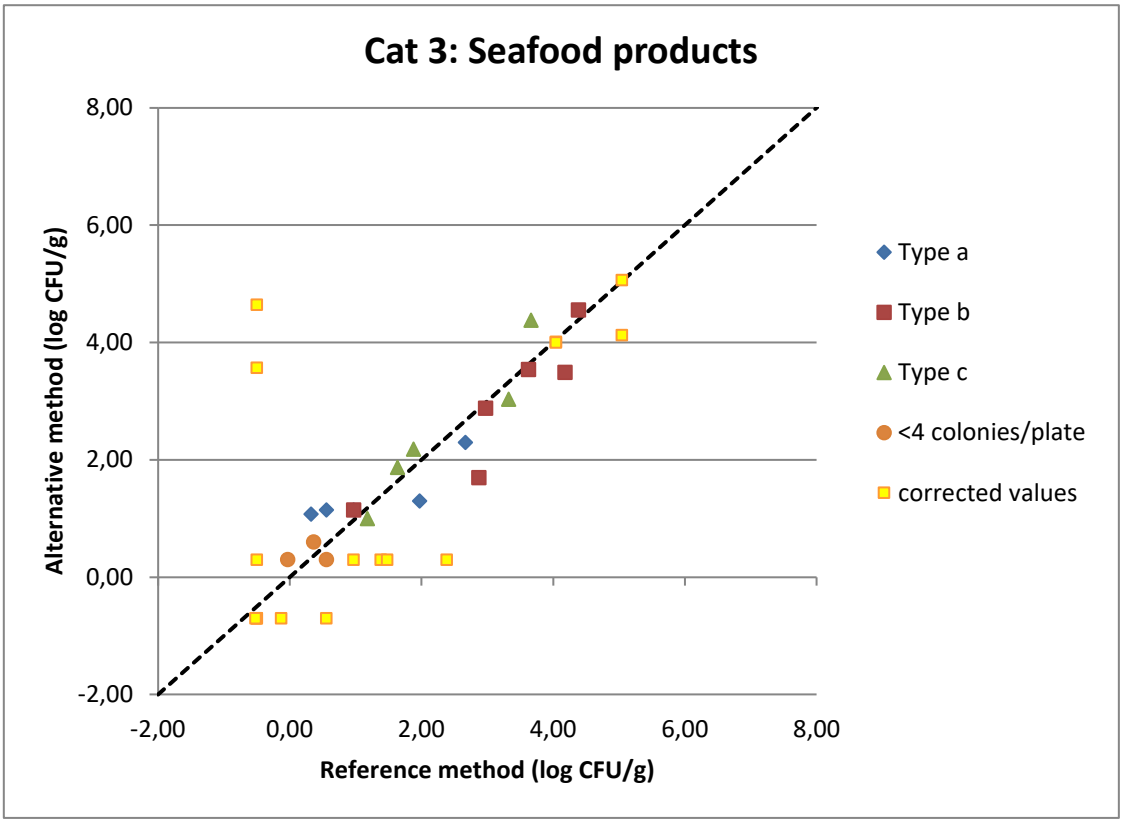


Figure 4 - Data plotted for **Egg products**

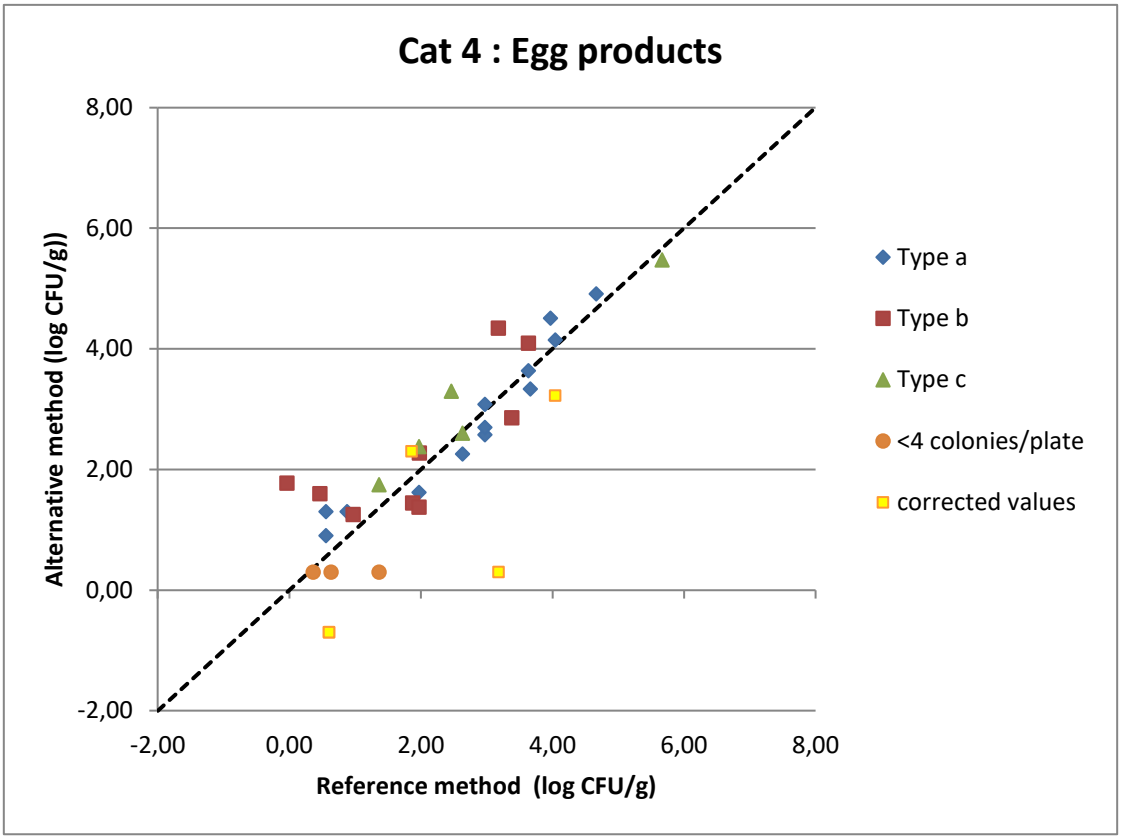


Figure 5 - Data plotted for Vegetables and others

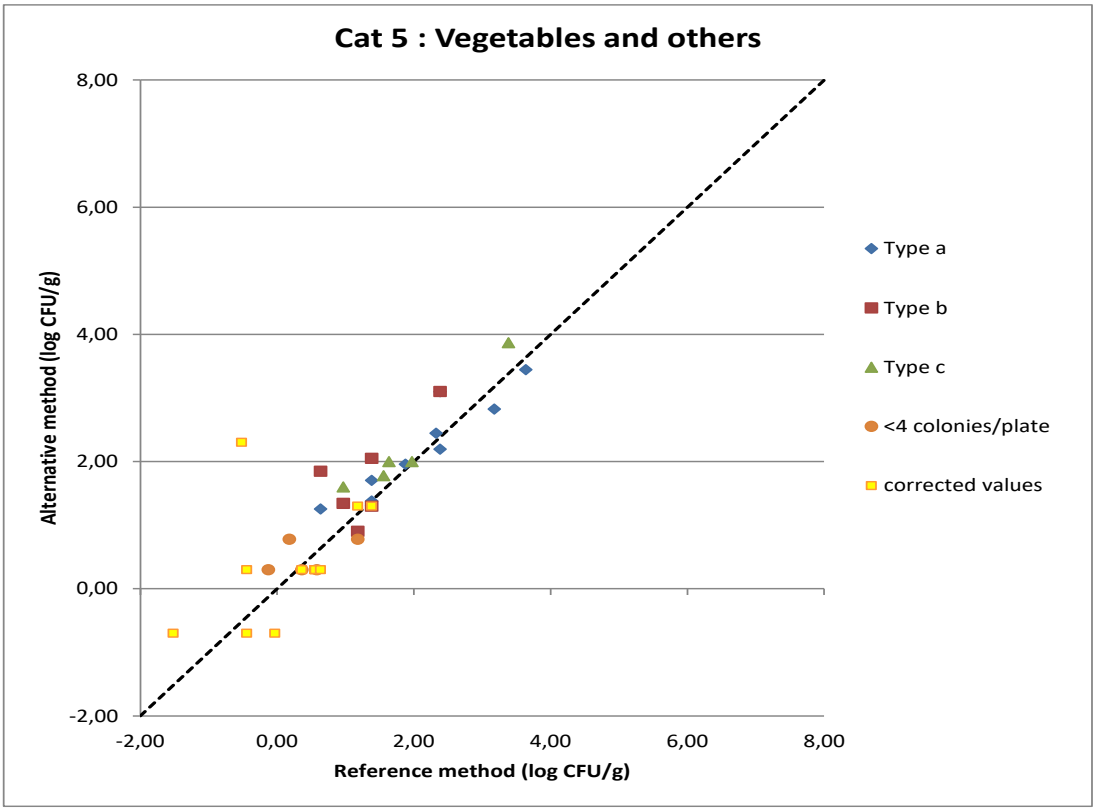
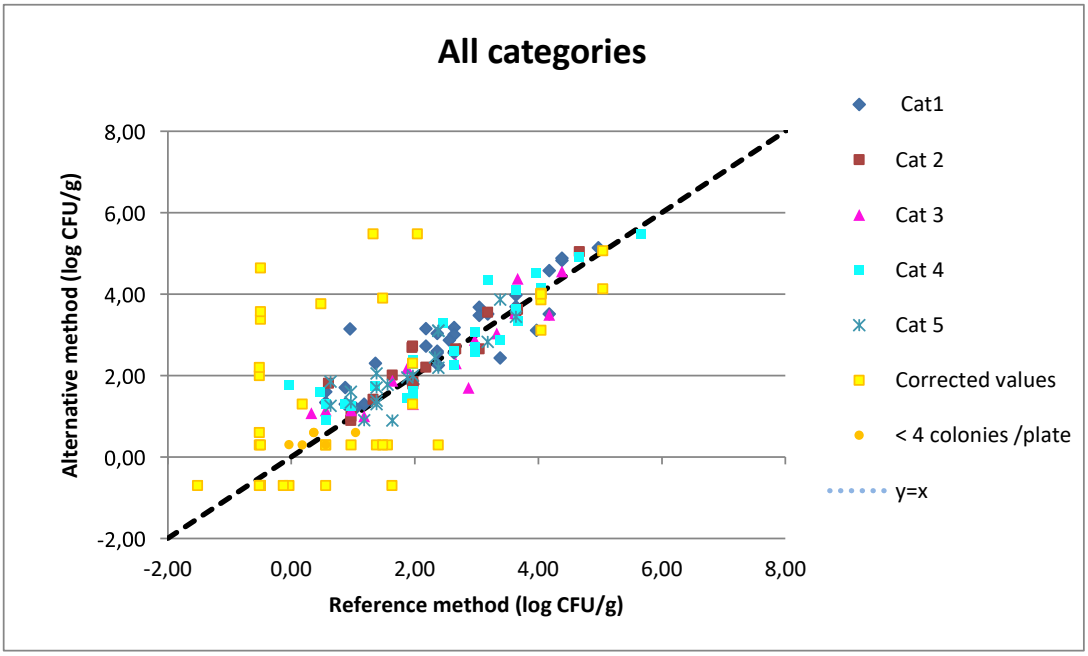


Figure 6 - Data plotted for All the products



The calculated values for Average difference and Standard deviation differences per category are provided in table 4.

Table 4 - Calculated values

Category	Number of samples with interpretable results	$\bar{D}$	SD	Lower limit (95%)	Upper limit (95%)
1-Meat products	31	0,35	0,59	-0,87	1,58
2-Dairy products	16	0,19	0,42	-0,73	1,12
3-Seafood products	15	-0,04	0,55	-1,25	1,17
4-Egg products	27	0,22	0,58	-1,00	1,43
5-Vegetables and others	20	0,22	0,47	-0,78	1,22
All categories	**109**	**0,22**	**0,54**	**-0,86**	**1,30**

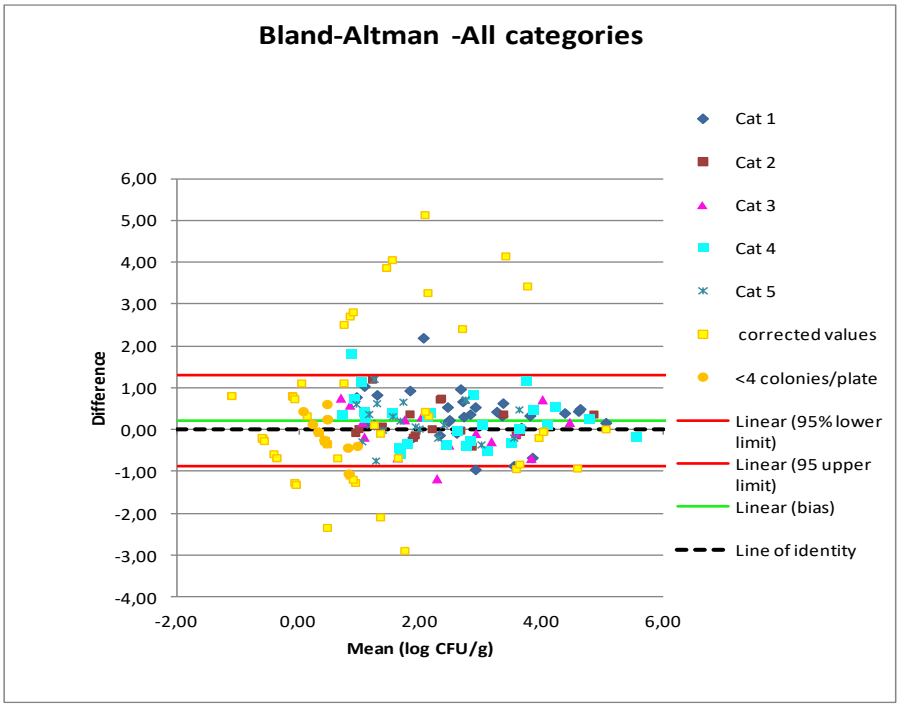
$\bar{D}$: Average difference

SD: Standard deviation of differences

The average differences vary from -0.04 log (Seafood products) to 0.35 log (Meat products) and the bias observed for all categories combined is 0.22 log.

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

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



Samples for which the difference between the result observed with the reference and the alternative methods is above or lower than the limits are listed in Table 5.

Table 5 - Analysis of the data out of the confidence limits

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

Corrected value
Results calculated using enumeration lower than 4 CFU/plate
LCL 95% Lower Confidence Limit
UCL 95% Upper Confidence Limit

Classification of the data	Category	Type	Sample N°	Product	Reference method	Alternative method	Values before correction (reference and/or alternative)	Mean	Difference	LCL and UCL	Comment
Interpretable results by both methods	1	a	40	Frozen mechanically separated poultry meat	3,97	3,11	/	4,20	-0,86	-0,85 / 1,30	/
	1	a	41	Frozen mechanically separated poultry meat	3,38	2,44	/	5,05	-0,94		/
	3	b	**8424**	**Marinated anchovies**	2,87	1,70	/	5,37	-1,17		Inoculated with *Klebsiella pneumoniae* Ad1374
	1	b	299	Grated smoked ham	0,95	3,15	/	2,71	2,20		/
	4	b	103	Pastry with pastry cream	-0,04	1,78	/	5,73	1,81		/
< 4 CFU/plate	4	c	377	Pastry	1,36	0,30	/	0,83	-1,06		/

Classification of the data	Category	Type	Sample N°	Product	Reference method	Alternative method	Values before correction (reference and/or alternative)	Mean	Difference	LCL and UCL	Comment
< or > quantification limit by one or both methods	1	b	88	Cooked pork meat	4,04	3,11	>5,04	3,58	-0,93	-0,85 / 1,30	/
	1	b	734	Chorizo	1,63	-0,7	<0,3	0,47	-2,33		/
	2	b	92	Cheese	1,56	0,30	<1,30	0,93	-1,26		/
	3	a	47	Raw fish	2,38	0,30	<1,30	1,34	-2,08		/
	3	a	48	Raw fish	1,38	0,30	<1,30	0,84	-1,08		/
	3	b	52	Smoked salmon	5,04	4,13	>4,04	4,58	-0,91		/
	3	c	18	Cooked shrimps	0,56	-0,70	<0,3	-0,07	-1,26		/
	3	c	165	Crayfish terrine	1,48	0,30	<1,30	0,89	-1,18		/
	4	c	**7689**	**Omelet with onions**	0,60	-0,70	<0,30	-0,05	-1,30		Inoculated with *Citrobacter freundii* Ad1326
	4	c	**7690**	**Omelet**	0,60	-0,70	<0,30	-0,05	-1,30		Inoculated with *Citrobacter freundii* Ad1326
	1	b	1	White pudding	1,32	5,48	>4,38	3,40	4,16		/
	1	b	9	Duck pâté	2,04	5,48	>4,38	3,76	3,44		/
	1	b	300	Diced ham	0,48	3,76	>1,48	2,12	3,28		/
	1	b	301	Rillettes	1,48	3,90	>2,48	2,69	2,42		/
	1	b	732	Pâté	-0,52	2,00	<0,48	0,74	2,52		/
	1	b	733	Liver pâté	-0,52	2,20	<0,48	0,84	2,72		/
	2	a	**7691**	**Pasteurized half skimmed milk**	-0,50	3,38	<0,50	1,44	3,88		Inoculated with *Enterobacter kobei* Ad706
	3	b	**8282**	**Smoked salmon**	-0,50	3,57	<0,50	1,53	4,07		Inoculated with *Enterobacter hormaechei* Ad1373
	3	b	**8283**	**Smoked haddock**	-0,50	4,64	<0,50	2,07	5,14		Inoculated with *Enterobacter hormaechei* Ad1373
	5	c	125	Green anise (spice)	-0,52	2,30	<0,48	0,89	2,82		/

3.1.1.5 Discordant results

The number of samples outside of the 95 % confidence limits is given in Table 6.

Table 6 - Number of samples outside of the 95 % confidence limits

		Number of samples
Interpretable results by both methods	< LCL	3
	> UCL	2
	Total	5
<4 CFU/plate	< LCL	1
	> UCL	0
	Total	1
< or > the quantification limit	< LCL	10
	> UCL	10
	Total	20
Total < LCL		14
Total >UCL		12
Total		**26**

Taking into account all the data, the number of values below the lower confidence limit is equivalent to the number of values above the confidence limit.

3.1.1.6 Conclusion

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

3.1.2 Accuracy profile study

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

3.1.2.1 Matrices

Five matrices were tested. A minimum of one type per category, and therefore 2 different batches, was selected, using 6 samples per type. 2 samples are contaminated at a low level, 2 at intermediate level, 2 at a high level. For each sample, 5 replicates (5 different test portions) were tested. The tested categories, types, matrix and inoculated strains are provided in Table 7.

Table 7 - Categories, types and matrices

Category		Type	Matrix	Inoculated strain	Origin	Inoculation level (CFU/g)
1	Meat products	a - Raw meat	Ground beef	*Enterobacter cloacae* 58	Unknown	300 5 000 100 000
2	Dairy products	a - Liquid milk (raw and pasteurized) and powder milk	Pasteurized milk	*Cronobacter sakazakii* 95	Cheese	
3	Seafood products	a - Raw	Raw fish fillet	*Escherichia coli* Ad228	Fish	
4	Egg products and pastries	a - Egg products	Pasteurized liquid whole egg	*Klebsiella pneumoniae* 89	Wiped cream	
5	Vegetables	a - RTC	Green peas	*Escherichia coli* 19	Grated carrots	

3.1.2.2 Calculation and interpretation

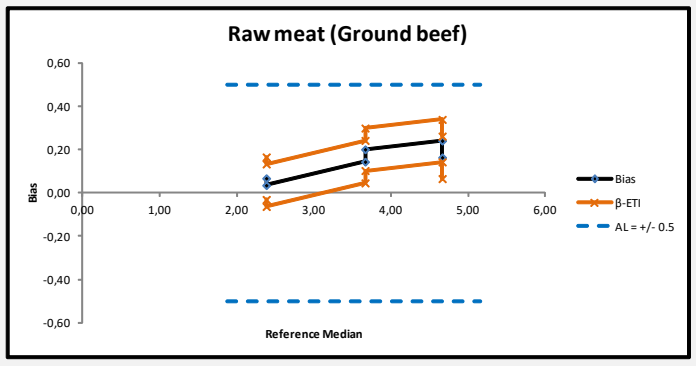
The raw data are provided in **Appendix 6**. The summary tables (in log CFU/g) and calculations are provided in **Appendix 7**. The statistical results and the accuracy profiles are provided Figure 8.

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

The accuracy profiles are comprised within the Acceptability Limits fixed at ± 0.5 log for all the tested matrices, except for raw fish fillet and green peas. For these matrices, Step 9 of Clause 1.3.3 in ISO 16140-2:2016 was applied: new Acceptability Limits were calculated as AL = 4 s_{ref}. For these matrices, accuracy profiles are comprised within the new AL.

Figure 8 – Accuracy profile

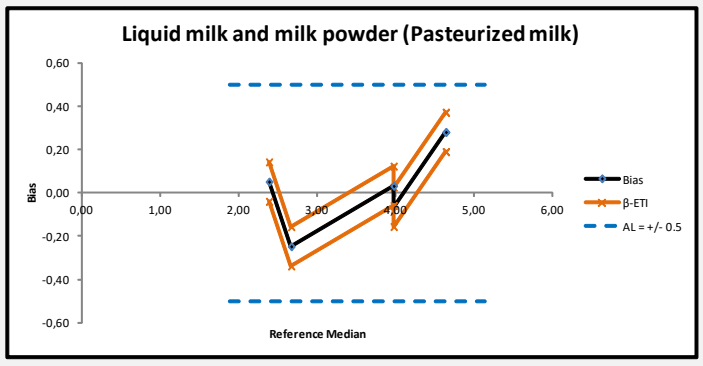
(Food) Category	Meat products
(Food) Type	Raw meat (Ground beef)



Sample Name	Reference central value	Bias	Lower β-ETI	Upper β-ETI	β-ETI compared to AL=±0.5 Acceptable	β-ETI compared to final AL Acceptable
634-638	2,38	0,067	-0,031	0,165	YES	YES
649-653	2,38	0,035	-0,063	0,133	YES	YES
639-643	3,66	0,143	0,045	0,242	YES	YES
654-658	3,66	0,201	0,102	0,299	YES	YES
644-648	4,66	0,240	0,142	0,338	YES	YES
659-663	4,66	0,163	0,065	0,261	YES	YES

	Reference method	Alternative method	SD repeatability of reference method <= 0.125	Final AL
SD Repeatability	0,207	0,068	NO	+/- 0,500

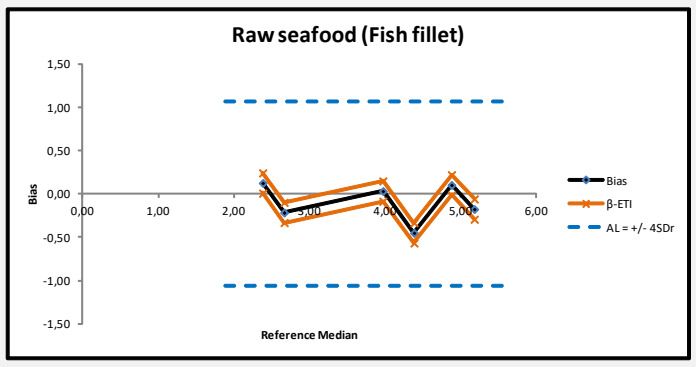
(Food) Category	Dairy products
(Food) Type	Liquid milk and milk powder



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
833-837	2,38	0,051	-0,040	0,142	YES	YES
848-852	2,66	-0,248	-0,339	-0,157	YES	YES
838-842	3,97	0,032	-0,059	0,122	YES	YES
853-857	3,97	-0,065	-0,156	0,026	YES	YES
843-847	4,63	0,280	0,189	0,371	YES	YES
858-862	4,63	0,280	0,189	0,371	YES	YES

	Reference method	Alternative method	SD repeatability of reference method <= 0.125	Final AL
SD Repeatability	0,303	0,063	NO	+/- 0,500

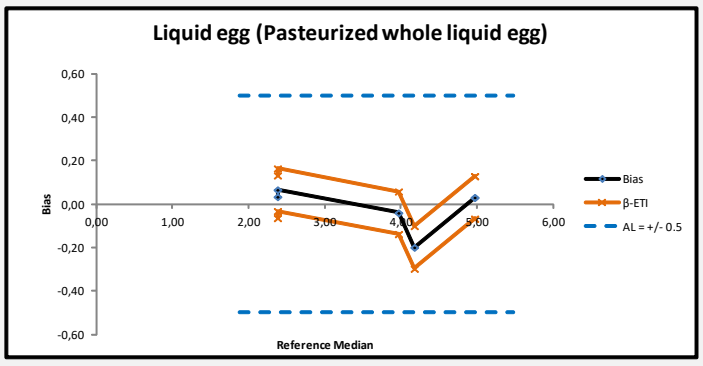
(Food) Category	Seafood products
(Food) Type	Raw seafood (Fish fillet)



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
1089-1093	2,38	0,125	0,008	0,242	YES	YES
1104-1108	2,66	-0,216	-0,333	-0,099	YES	YES
1094-1098	3,97	0,032	-0,085	0,148	YES	YES
1109-1113	4,38	-0,451	-0,568	-0,334	NO	YES
1114-1118	4,88	0,103	-0,014	0,220	YES	YES
1099-1103	5,18	-0,176	-0,293	-0,059	YES	YES

	Reference method	Alternative method	SD repeatability of reference method <= 0.125	Final AL
SD Repeatability	0,266	0,081	NO	+/- 1,064

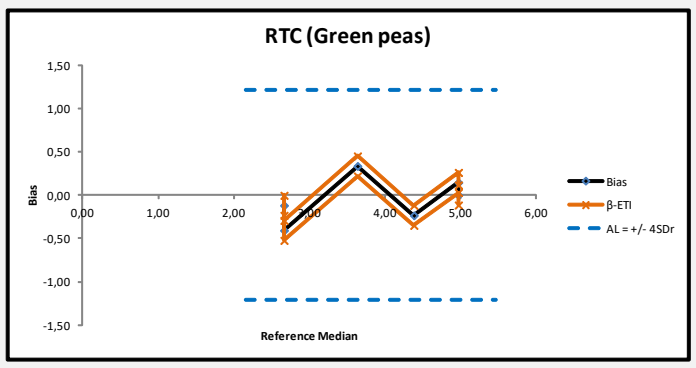
(Food) Category	Egg products and pastries
(Food) Type	Liquid egg (Pasteurized whole



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
1327-1331	2,38	0,035	-0,063	0,133	YES	YES
1342-1346	2,38	0,067	-0,031	0,165	YES	YES
1332-1336	3,97	-0,039	-0,137	0,059	YES	YES
1347-1351	4,18	-0,198	-0,297	-0,100	YES	YES
1337-1341	4,97	0,032	-0,067	0,130	YES	YES
1352-1356	4,97	0,032	-0,067	0,130	YES	YES

	Reference method	Alternative method	SD repeatability of reference method <= 0.125	Final AL
SD Repeatability	0,233	0,068	NO	+/- 0,500

(Food) Category	Vegetables
(Food) Type	RTC (Green peas)



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
1462-1466	2,66	-0,119	-0,234	-0,003	YES	YES
1477-1481	2,66	-0,407	-0,523	-0,292	NO	YES
1482-1486	3,63	0,335	0,220	0,451	YES	YES
1467-1471	4,38	-0,234	-0,350	-0,119	YES	YES
1472-1476	4,97	0,145	0,030	0,261	YES	YES
1487-1491	4,97	0,000	-0,115	0,115	YES	YES

	Reference method	Alternative method	SD repeatability of reference method <= 0.125	Final AL
SD Repeatability	0,303	0,080	NO	+/- 1,212

3.1.2.3 Conclusion

The observed profiles are comprised within the AL. All the accuracy profiles fulfil the performance criteria.

3.1.3 Inclusivity and exclusivity studies

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

3.1.3.1 Protocol

- **Inclusivity**

33 strains were tested: 21 in 1999 and 12 in 2007. 23 additional strains were tested for the renewal study in 2019.

Each test was performed once with the alternative method, the reference method and a non-selective agar. The inoculation level shall obtain a countable number on the plate. For the ISO 4831 method, one loop from BHI culture was transferred in a LST broth before inoculation of the BLBVB tube.

- **Exclusivity**

14 strains were tested in 1999 and 17 strains in 2007. No additional testing was required for the renewal study.

3.1.3.2 Results

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

- **Inclusivity**

57 strains were tested; 5 were not able to produce gas in BLBVB and on PHSCC:

- *Citrobacter koseri* Ad2731,
- *Escherichia fergusonii* Ad1381,
- *Escherichia hermanii* Ad464,
- *Hafnia alvei* Ad2274,
- *Hafnia alvei* Ad1380.

2 strains were not able to produce gas only on PHSCC:

- *Citrobacter braakii* Ad835,
- *Citrobacter farmeri* Ad1116.

> **Exclusivity**

None of the 30 non target strains tested was able to give gas producing colonies on PHSCC. The same result was obtained in BLBVB (ISO 4831).

The 3M™ Petrifilm™ High-Sensitivity Coliform Count plate is as specific and selective as the reference method.

3.1.4 Practicability

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

Criteria to be control	Communication on criteria	Expert lab checking procedure
Storage conditions	Store the unopened 3M Petrifilm pouches at frozen or refrigerated temperature less than or equal to 8°C (46°F)	Mentioned on the instruction for use
Shelf-life and modalities of utilization after first use	Store resealed pouches in a cool dry place for no longer than four weeks	Mentioned in the kit insert
Time to result	24 h ± 2 h	Mentioned in the kit insert
Common step with the reference method		Initial suspensions and dilutions

The results are available in one day with the alternative method and four days with the reference method.

3.2 Inter-laboratory study

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

In agreement with the AFNOR Technical Committee, the 3M™ Petrifilm™ High-Sensitivity Coliform Count plate was compared to the ISO 4832 standard (See the flow diagram in **Appendix 9**) as it was more relevant to compare methods based on the same principle, i.e. colonies enumerations, while it is not the case for the ISO 4831. The coliform strain used to spike the sample was *E. coli* 94 isolated from dairy product and is developing a typical coliform aspect when ISO 4831 or ISO 4832 is used.

3.2.1 Study organisation

The study was carried out in 2007 on pasteurized half-skimmed milk inoculated with *Escherichia coli* 94. Twelve collaborators were involved in the study.

Each laboratory received eight flasks of 25 ml milk, i.e. two flasks per inoculation level. One non-inoculated sample was added to the package for total viable count microflora (NF ISO 4833 method).

3.2.2 Experimental parameters controls

In order to evaluate the *Escherichia coli* 94 strain stability during transport, bacterial count of all inoculated flasks was checked at different time, i.e. inoculation time, after 24 h and 48 h of storage at 2 - 8°C. Results are reported in Table 8.

Table 8 - *Escherichia coli* 94 count with ISO 4832 method (CFU/ml)

	Replicate 1	Replicate 2	Replicate 3
Day 0	870	810	1 000
Day 1	930	910	760
Day 2	640	630	790

No evolution of the strain was observed after 48 h storage at 3°C ± 2°C in the isothermal box.

3.2.3 Logistic conditions

The temperatures measured at reception by the Labs, the temperatures registered by the thermo-probe, and the receipt dates are given in Table 9.

Table 9 - Sample temperatures at receipt

Laboratories	Temperature measured by the probe (°C)	Temperature measured at receipt (°C)	Receipt date and time	
A	0.00	1.7	17/04/07	10h00
B	- 0.50	4.6	17/04/07	09h00
C	2.00	0.7	17/04/07	08h30
D	0.50	1.4	17/04/07	10h45
E	0.00	3.5	17/04/07	09h15
F	2.50	0.7	17/04/07	10h00
G	2.00	3.1	17/04/07	11h20
H	0.00	Empty flask	17/04/07	12h25
I	0.50	3.2	17/04/07	12h00
J	0.00	1.3	17/04/07	11h15
K	2.00	4.9	17/04/07	14h00
L	- 0.50	2.7	17/04/07	07h30

No problem was encountered during the transport or at receipt for the 12 collaborators. All the samples were delivered on time and in appropriate conditions. Temperatures during shipment and at receipt were all correct.

3.2.4 Result analysis

The raw data are given in **Appendix 10**.

3.2.4.1 Results obtained by the expert Lab.

The results obtained by the expert Lab. are the following (See Table 10).

Table 10 – Results obtained by the expert Lab (in log CFU/ml)

Targeted rate	ISO 4832♦		Alternative method	
	Duplicate 1	Duplicate 2	Duplicate 1	Duplicate 2
< 1	< 1	< 1	< 0.2	< 0.2
1 to 2	2.04	1.90	1.96	1.88
2 to 3	2.93	2.66	2.98	2.82
3 to 4	3.78	3.52	4.00	4.04

Contamination levels targeted were reached.

3.2.4.2 Results obtained by the collaborators

Samples were sent to 12 collaborators.

- ***Mesophilic aerobic microflora***

The mesophilic aerobic microflora was done on the matrix with ISO 4833 method. The results varied from 520 to 1 200 000 CFU/ml.

- ***Gas producing coliforms enumeration***

Lab G has performed the tests incubation at 44°C, the results were discarded from the calculations. The results of 11 labs were thus used for the ISO 16140 calculations.

A summary of the test results is given in Table 11 (CFU/ml).

♦ Analyses performed according to the COFRAC accreditation

Table 11 - Summary of data (CFU/ml)

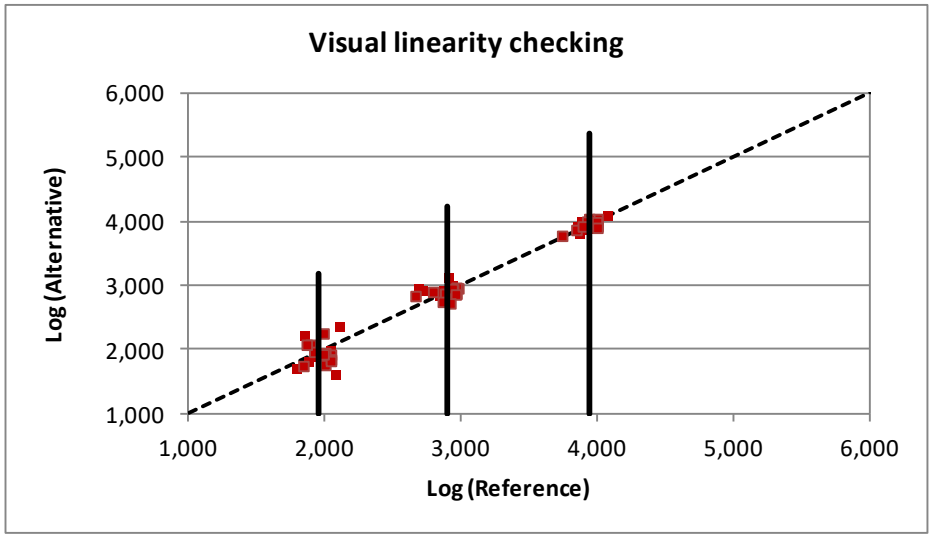
Laboratories	Level 0				Level 1				Level 2				Level 3			
	Reference method		Alternative method		Reference method		Alternative method		Reference method		Alternative method		Reference method		Alternative method	
A	<1	<1	<0.2	<0.2	95	110	73	84	750	760	620	750	7700	7000	7400	7400
B	<1	<1	<0.2	<0.2	95	78	89	120	750	950	820	910	9500	9900	7600	9300
C	<1	<1	<0.2	<0.2	76	83	64	93	860	920	710	750	7200	10000	8000	8500
D	<1	<1	<0.2	<0.2	84	100	76	58	710	920	730	930	9600	10000	8200	11000
E	<1	<1	<0.2	<0.2	100	110	89	71	920	870	780	870	9800	8700	7600	11000
F	<1	<1	<0.2	<0.2	62	69	49	56	530	460	820	690	7500	5500	6200	6000
H	<1	<1	<0.2	<0.2	110	100	95	89	810	860	1300	890	12000	10000	12000	8700
I	<1	<1	<0.2	<0.2	120	110	40	67	700	730	690	560	9200	9900	9300	9800
J	<1	<1	<0.2	<0.2	71	73	160	120	490	620	860	800	7800	8400	9600	10000
K	<1	<1	<0.2	<0.2	85	97	91	85	880	910	960	730	9200	10000	9800	8000
L	<1	<1	<0.2	<0.2	130	97	220	180	810	830	600	530	7700	7800	8800	8400

3.2.5 Calculation and interpretation

3.2.5.1 Visual linearity checking

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

Figure 9 - Visual linearity checking



3.2.5.2 *Accuracy profile calculation*

Statistical calculations were done according to the Excel spreadsheet available on http://standards.iso.org/ISO/16140. A summary of the statistical test is provided in Table 12.

Table 12 - Summary of statistical tests

Accuracy profile						
Study Name	3M PHSCC					
Date	2007					
Coordinator	ADRIA Développement			F		
Tolerance probability (beta)	80%	80%	80%			
Acceptability limit in log (lambda)	0,50	0,50	0,50			

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

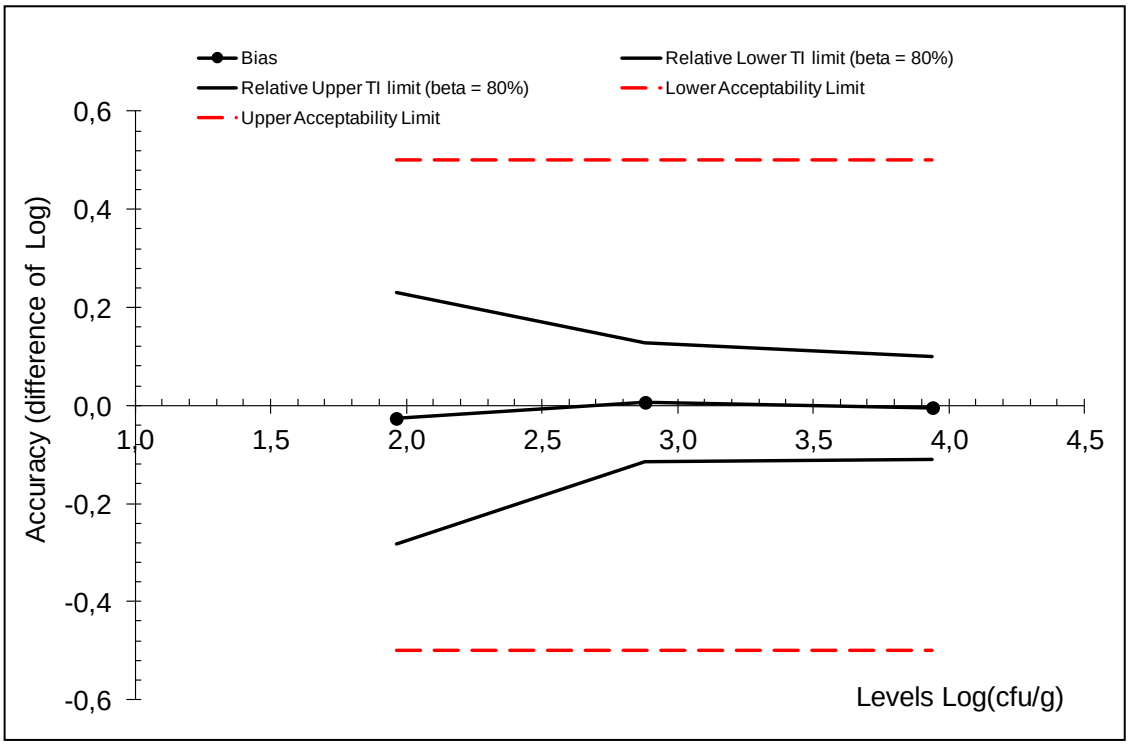
	Alternative method			**Reference method**		
Levels	**Low**	**Medium**	**High**	**Low**	**Medium**	**High**
Target value	**1,963**	**2,881**	**3,940**			
Number of participants (K)	11	11	11	11	11	11
Average for alternative method	1,936	2,887	3,936	1,963	2,881	3,940
Repeatability standard deviation (sr)	0,082	0,061	0,060	0,045	0,043	0,049
Between-labs standard deviation (sL)	0,162	0,063	0,047	0,073	0,081	0,058
Reproducibility standard deviation (sR)	0,181	0,088	0,076	0,086	0,092	0,076
Corrected number of dof	12,272	15,941	17,681	13,179	12,404	15,062
Coverage factor	1,409	1,382	1,373			
Interpolated Student t	1,355	1,337	1,331			
Tolerance interval standard deviation	0,1887	0,0905	0,0789			
Lower TI limit	1,681	2,766	3,831			
Upper TI limit	2,192	3,008	4,041			
Bias	**-0,026**	**0,006**	**-0,004**			
Relative Lower TI limit (beta = 80%)	**-0,282**	**-0,115**	**-0,109**			
Relative Upper TI limit (beta = 80%)	**0,229**	**0,127**	**0,101**			
Lower Acceptability Limit	**-0,50**	**-0,50**	**-0,50**			
Upper Acceptability Limit	**0,50**	**0,50**	**0,50**			

New acceptability limits may be based on reference method pooled variance	
Pooled repro standard dev of reference	0,085

	Alternative method		
Levels	**Low**	**Medium**	**High**
Target value	**1,963**	**2,881**	**3,940**
Bias	**-0,026**	**0,006**	**-0,004**
Relative Lower TI limit (beta = 80%)	**-0,282**	**-0,115**	**-0,109**
Relative Upper TI limit (beta = 80%)	**0,229**	**0,127**	**0,101**
Lower Acceptability Limit	**-0,50**	**-0,50**	**-0,50**
Upper Acceptability Limit	**0,50**	**0,50**	**0,50**

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

Figure 10 - Accuracy profile



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

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

3.2.5.3 Conclusion

The alternative method is equivalent to the reference method.

4 GENERAL CONCLUSION

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

For the method comparison study:

- **194 samples were tested in the relative trueness study providing 109 interpretable results by both methods,** which clearly satisfied the required criteria for quantitative method comparison per ISO 16140-2**.**

- **The observed profiles are comprised within the AL which are in most of the cases fixed at ± 0,5 log.**

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

For the inter-laboratory study:

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

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

Based on the results obtained for the method comparison study and the inter-laboratory study, the 3M™ Petrifilm™ High-Sensitivity Coliform Count plate is considered equivalent to the reference method.

Quimper, 16 March 2023

Maryse RANNOU
Project Manager
Validation of Alternative methods

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

Appendix 1 – Flow diagram of the alternative method: 3M™ Petrifilm™ High-Sensitivity Coliform Count plate

Sample

↓

x g + 9 x ml according to ISO 6887 parts or liquid product

If necessary, adjust the pH of the suspension between 6.5 and 7.5

↓

Decimal dilution in appropriate diluent

↓

5 ml per Petrifilm HSCC plate

↓

Incubation for 24 h ± 2 h at 30°C ± 1°C or 37°C± 1°C*

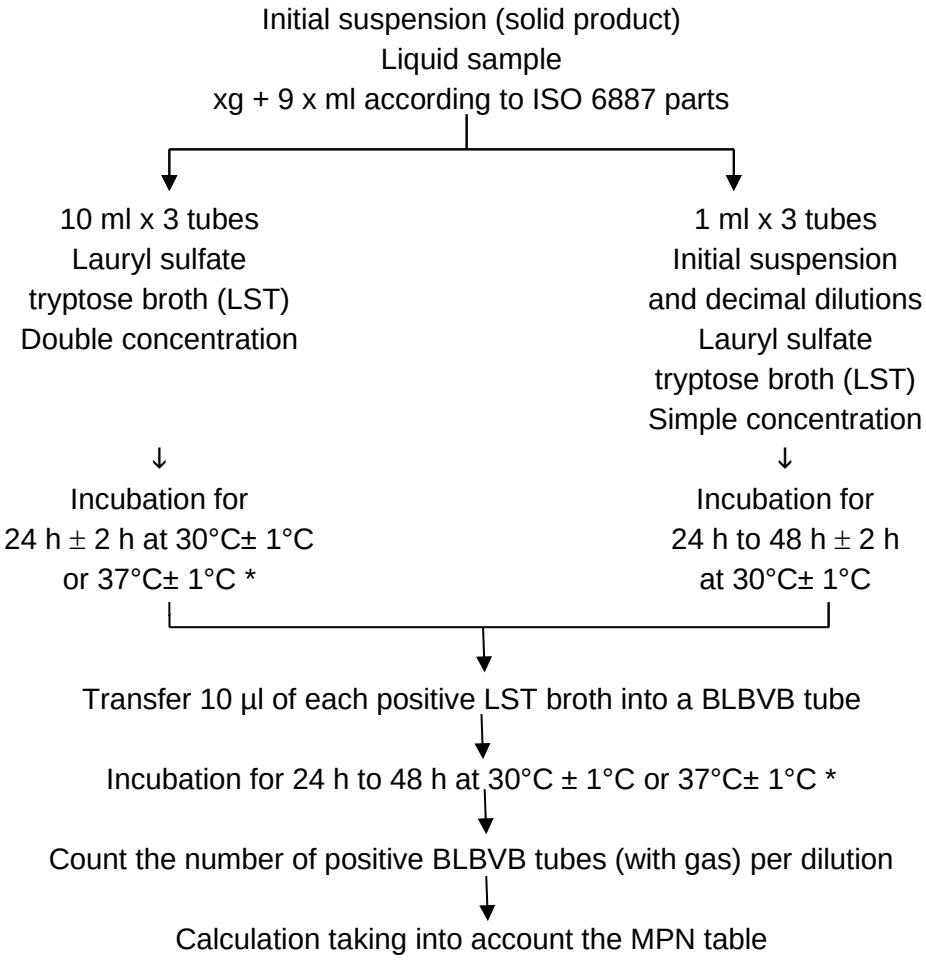
↓

Characteristic (red and gas producers) colonies enumeration

(maximum 150 colonies/ plate)

* Only 30°C was tested during the validation study

Appendix 2 – Flow diagram of the reference method: ISO 4831: Horizontal method for the detection and enumeration of coliforms. Most probable number technique



* Only 30°C is tested during the validation study

Appendix 3 – Artificial contaminations of samples

Analysis date	Sample N°	Product	Artificial contamination				Category	Type
			Strain	Origin	Injury	Injury measurment		
2018	**7683**	**Smoked herring**	E. coli Ad228	Fish	Seeding 48h 3±2°C	/	3	b
2018	**7684**	**Smoked salmon**	E. coli Ad228	Fish	Seeding 48h 3±2°C	/	3	b
2018	**7685**	**Marinated anchovy (garlic, capers, parsley)**	E. coli Ad228	Fish	Seeding 48h 3±2°C	/	3	b
2018	**7686**	**Smoked mackerel**	C. braakii Ad2701	Seafood	Seeding 48h 3±2°C	/	3	b
2018	**7687**	**Marinated smoked salmon (dill-lemon)**	C. braakii Ad2701	Seafood	Seeding 48h 3±2°C	/	3	b
2018	**7688**	**Marinated cuttlefish (garlic-parsley)**	C. braakii Ad2701	Seafood	Seeding 48h 3±2°C	/	3	b
2018	**7689**	**Omelet with onions**	C. freundii Ad1326	Egg product	Seeding 48h 3±2°C	/	4	c
2018	**7690**	**Omelet**	C. freundii Ad1326	Egg product	Seeding 48h 3±2°C	/	4	c
2018	**7691**	**Pasteurized half skimmed milk**	E. kobei Ad706	Milk powder	Spiking heat treatment 8min 56°C	0,4	2	a
2018	**7692**	**Pasteurized half skimmed milk**	E. vulneris 127	Raw milk	Spiking heat treatment 8min 56°C	2,8	2	a
2018	**7693**	**Half skimmed milk powder**	E. kobei Ad706	Milk powder	Spiking heat treatment 8min 56°C	0,4	2	a
2018	**7694**	**Skimmed milk powder**	E. vulneris 127	Raw milk	Spiking heat treatment 8min 56°C	2,8	2	a
2018	**8045**	**Smoked salmon**	E. coli Ad228	Fish	Seeding 48h 3±2°C	/	3	b
2018	**8046**	**Marinated mackerel with pepper**	E. coli Ad228	Fish	Seeding 48h 3±2°C	/	3	b
2018	**8047**	**Smoked herring**	E. coli Ad228	Fish	Seeding 48h 3±2°C	/	3	b
2018	**8058**	**Half-skimmed pasteurized milk**	E. cloacae 10	Milk	Spiking heat treatment 8min 56°C	1,8	2	a
2018	**8059**	**Half-skimmed pasteurized milk**	E. cloacae 10	Milk	Spiking heat treatment 8min 56°C	1,8	2	a
2018	**8207**	**Omelet with onions**	S. liquefaciens 26	Egg product	Seeding 48h 3±2°C	/	4	c
2018	**8282**	**Smoked salmon**	E. hormaechei Ad1373	Water	Seeding 48h 3±2°C	/	3	b
2018	**8283**	**Smoked haddock**	E. hormaechei Ad1373	Water	Seeding 48h 3±2°C	/	3	b
2018	**8315**	**Raw milk cheese (Emmental)**	P. agglomerans 11	Cheese	Seeding 48h 3±2°C	/	2	b
2018	**8424**	**Marinated anchovies**	K. pneumoniae Ad1374	Water	Seeding 48h 3±2°C	/	3	b
2018	**8425**	**Smoked salmon**	K. pneumoniae Ad1374	Water	Seeding 48h 3±2°C	/	3	b

Appendix 4 - Relative trueness study: raw data

MEAT PRODUCTS																		
Analysis date	Sample N°	Product (French name)	Product	Reference method : ISO 4831♦					Alternative method : 3M™ Petrifilm™ HSCC (PHSCC)							Category	Type
				MPN / g		log MPN		Result kept for interpretation	Dilution	CFU/plate		CFU/g		log CFU/g			
				rep 1	rep 2	rep 1	rep 2			rep 1	rep 2	rep 1	rep 2	rep 1 (kept for interpretation)	rep 2		
1999	1	Boudin blanc	White pudding					1,32						>4,48	>4,48	1	b
1999	2	Jambon blanc	Ham					3,04						3,68	3,64	1	b
1999	3	Jambon blanc	Ham					0,87						1,30	1,30	1	b
1999	9	Mousse de canard	Duck pâté					2,04						>4,48	>4,48	1	b
1999	14	Rillettes	Rillettes					1,04						1,20	1,41	1	b
1999	40	VSM dinde crue congelé	Frozen mechanically separated poultry meat					3,97						3,11	3,02	1	a
1999	41	VSM dinde crue congelé	Frozen mechanically separated poultry meat					3,38						2,44	2,66	1	a
1999	42	VSM dinde crue congelé	Frozen mechanically separated poultry meat					3,63						3,98	3,95	1	a
1999	58	Jambon blanc	Ham					>3,04						3,86	3,76	1	b
1999	59	Boudin noir aux pommes	Black apple pudding					2,18						2,72	2,75	1	b
1999	85	Jambon blanc	Ham					ND (no positive tube)						>3,48	>3,48	1	b
1999	100	Emincés de gesiers de canard crus	Raw duck gizzard					3,04						ND	ND	1	a
1999	105	Pâté de campagne	Pâté					4,38						4,83	4,74	1	b
1999	106	Museau (cuit)	Cooked muzzle					4,38						4,88	4,76	1	c
1999	107	Roti cuit	Cooked roast					4,18						3,51	3,67	1	c
1999	115	Pâté de foie	Liver pâté					2,63						3,18	3,29	1	b
1999	116	Pâté au poivre	Pâté with pepper					2,63						3,01	3,17	1	b
1999	118	Langue de boeuf crue	Raw beef tongue					3,63						3,69	3,54	1	a
1999	119	Côte de porc crue	Raw pork meat					1,97						1,79	1,82	1	a
1999	120	Boudin blanc au porto	White pudding					3,18						3,51	3,54	1	b
1999	122	Epaule DD (jambon blanc)	Ham					4,18						4,58	4,41	1	b
1999	7	Pizza chèvre-lardons	Pizza with goat cheese and bacon					0,56						1,34	1,51	1	c
1999	8	Raviolines aux noix	Ravioli with nuts					1,96						<2,30	<2,30	1	c
1999	12	Boeuf bourguignon (plat préparé cuit)	Cooked beef meat					0,87						1,71	1,64	1	c
1999	13	Langue de boeuf sauce madère	Cooked beef meat					0,56						1,60	1,49	1	c
1999	17	Porc au saté	Cooked pork meat					<0.48						<0,30	<0,3	1	c
1999	30	Roulé dauphinois	Ready to reheat					0,36						0,60*	<0.3	1	c
1999	31	Pizza jambon champignons	Pizza with ham and mushroom					2,18						3,15	3,13	1	c
1999	49	Langue de boeuf sauce madère	Cooked beef meat					3,04						3,48	3,41	1	c
1999	88	Cochonette (cuite)	Cooked pork meat					>3,04						3,11	3,18	1	b
1999	145	Langue de boeuf sauce madère	Cooked beef meat					0,18						0,30*	<0,30	1	c
1999	146	Fricadelles à la tomate	Patties with tomatoes					-0,04						<0,30	<0,30	1	b
1999	150	Rognons au porto	Cooked kidney					4,97						5,14	5,16	1	c
1999	151	Boeuf aux carottes	Beef with carrots					2,56						2,87	3,03	1	c
1999	156	Paupiette (plat préparé cuit)	Cooked meat (paupiette)					2,63						2,56	2,71	1	c
1999	157	Choux farci	Stuffed cabbage					1,18						1,30	1,45	1	c
1999	158	Tomate farcie	Stuffed tomatoes					2,38						2,26	2,19	1	c

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MEAT PRODUCTS																				
Analysis date	Sample N°	Product (French name)	Product	Reference method : ISO 4831◆					Alternative method : 3M™ Petrifilm™ HSCC (PHSCC)								Category	Type
				MPN / g		log MPN		Result kept for interpretation	Dilution	CFU/plate		CFU/g		log CFU/g				
				rep 1	rep 2	rep 1	rep 2			rep 1	rep 2	rep 1	rep 2	rep 1 (kept for interpretation)	rep 2		
2007	209	Pâté de campagne	Pâté	230	93	2,36	1,97	2,36	2	38	39	360	370	2,56	2,57	1	b
									20	2	2						
2007	210	Mousse de foie	Liver pâté	23	93	1,36	1,97	1,36	2	21	14	200	140	2,30	2,15	1	b
									20	1	1						
2007	211	Pâté de tête persillé	Pâté	230	230	2,36	2,36	2,36	20	5	20	400	2000	2,60	3,3	1	b
									200	0	2			Ne			
2007	212	Rillettes de canard	Duck rillettes	230	430	2,36	2,63	2,36	20	11	13	1100	1300	3,04	3,11	1	b
									200	0	1						
2007	299	Jambon fumé râpé	Grated smoked ham	9	4	0,95	0,6	0,95	20	71	72	1400	1400	3,15	3,15	1	b
									200	6	3						
2007	300	Dés de jambon	Diced ham	<30	<30	<1,48	<1,48	<1,48	200	27	33	5800	6000	3,76	3,78	1	b
									2000	5	0						
2007	301	Rillettes	Rillettes	<300	<300	<2,48	<2,48	<2,48	200	39	48	8000	9800	3,90	3,99	1	b
									2000	5	6						
2007	369	Pâté en croûte	Pâté en croûte	<3	<3	<0,48	<0,48	<0,48	2	1	2	2	4	0,30*	0,6	1	b
									20	0	0						
2007	370	Rôti de porc cuit	Cooked roast pork	11	9	1,04	0,95	1,04	2	2	5	4	10	0,60*	1,00	1	b
									20	0	0			Ne			
2007	732	Pâté de campagne	Pâté	<3	<3	<0,48	<0,48	<0,48	2	55	46	100	84	2,00	1,92	1	b
									20	0	0						
2007	733	Pâté de foie	Liver pâté	<3	<3	<0,48	<0,48	<0,48	2	90	107	160	200	2,20	2,30	1	b
									20	0	0						
2007	734	Chorizo	Chorizo	43	240	1,63	2,38	1,63	20	0	0	<20	<20	<0,30	<0,30	1	b
									200	0	0						

DAIRY PRODUCTS																		
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				MPN / g		log MPN		Result kept for interpretation	Dilution	CFU/plate		CFU/g		log CFU/g			
				rep 1	rep 2	rep 1	rep 2			rep 1	rep 2	rep 1	rep 2	rep 1 (kept for interpretation)	rep 2		
1999	15	Lait cru	Raw milk					>3.04						4,02	3,91	2	a
1999	25	Buchette pralinée congelée	Frozen dairy dessert					1,32						1,41	1,26	2	c
1999	32	Crème sucre (au beurre)	Butter cream					0,97						1,00	0,60	2	c
1999	35	Brie	Brie (cheese)					0,56						<1,30	<1,30	2	b
1999	60	Nougat glacé (glace)	Frozen nougat					<-0,52						<0,30	<0,30	2	c
1999	90	Buche de Noël Grand marnier (congelée)	Frozen Christmas log					1,97						1,85	2,03	2	c
1999	92	Fromage Fol épi	Cheese					1,56						<1,30	<1,30	2	b
1999	93	Fromage Pyreneés	Cheese					1,96						2,72	2,67	2	b
1999	94	Fromage Cousteron	Cheese					1,96						<3,30	<3,30	2	b
1999	95	Fromage Gouda	Cheese					0,56						<1,30	<1,30	2	b
1999	96	Fromage Saint Albray	Cheese					0,18						<2,30	<2,30	2	b
1999	97	Fromage Brie pasteurisé	Pasteurized milk cheese					1,63						2,02	2,14	2	b
1999	98	Vieux pané	Cheese					3,63						ND	ND	2	b
1999	99	Fromage Belle des champs	Cheese					0,96						0,90	<0,30	2	b
1999	113	Beurre fermier	Butter					3,63						3,51	3,41	2	c
1999	114	Fromage frais	Fresh cheese					2,18						2,20	1,90	2	b
1999	123	Nougat glacé glace)	Frozen nougat					1,97						1,79	1,78	2	c
1999	16	Buchette à la poire (congelée)	Frozen pear dessert					2,66						2,66	2,46	2	c
2018	**7691**	**Lait pasteurisé demi-écrémé**	**Pasteurized half skimmed milk**	<3		<0,5		<0,5	20	118		2400		3,38		2	a
									200	13							
2018	**7692**	**Lait pasteurisé demi-écrémé**	**Pasteurized half skimmed milk**	4300		3,63		3,63	2000	FA>150		ND		ND		2	a
									20000	FA =57							
2018	**7693**	**Poudre de lait demi écrémé**	**Half skimmed milk powder**	4		0,60		0,60	2	33		65		1,81		2	a
				[1;27]		[0;1,43]		[0;1,43]	20	3							
2018	**7694**	**Poudre de lait écrémé**	**Skimmed milk powder**	90		1,95		1,95	20	FA >150		ND		ND		2	a
									200	FA >150							
2018	7695	Lait cru	Raw milk	90		1,95		1,95	20	24		490		2,69		2	a
				[22;400]		[1,34;2,6]		[1,34;2,6]	200	3							
2018	7696	Lait cru	Raw milk	1100		3,04		3,04	20	24		450		2,65		2	a
									200	1							
2018	7697	Roquefort (fromage au lait cru de brebis)	Roquefort (raw ewe milk cheese)	<3		<0,50		<0,50	2	0		<2		<0,30		2	c
									20	0							
2018	7698	Camembert (fromage au lait cru de vache)	Camembert (raw cow milk cheese)	ND		ND		ND (no positive tube)	20	>150		>30000		>4,48		2	c
									200	>150							
2018	**8058**	**Lait pasteurisé demi-écrémé**	**Half-skimmed pasteurized milk**	4600		3,66		3,66	200	23		4200		3,62		2	a
									2000	0							
2018	**8059**	**Lait pasteurisé demi-écrémé**	**Half-skimmed pasteurized milk**	46000		4,66		4,66	2000	55		110000		5,04		2	a
									20000	8							
2018	**8315**	**Emmental au lait cru**	**Raw milk cheese (Emmental)**	1500		3,18		3,18	20	>150		3600		3,56		2	b
									200	18				N'			

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SEAFOOD																		
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				MPN / g		log MPN		Result kept for interpretation	Dilution	CFU/plate		CFU/g		log CFU/g			
				rep 1	rep 2	rep 1	rep 2			rep 1	rep 2	rep 1	rep 2	rep 1 (kept for interpretation)	rep 2		
1999	6	Pizza au saumon	Pizza with salmon					0,56						0,30*	0,30	3	c
1999	10	Coquille st Jacques	Scallops					0,56						1,15	1,20	3	a
1999	11	Paupiette de sole (cuite)	Cooked fish					<0.48						<0,30	<0,30	3	c
1999	18	Crevettes au curry	Cooked shrimps					0,56						<0,30	<0,30	3	c
1999	34	Croquettes de poisson (ail et fh) crues, congelées	Raw and frozen shrimps with garlic and herbs					>3,04						4,01	4,15	3	a
1999	51	Merlan sauce au vin (plat préparé cuit)	Cooked fish					>4,04						5,06	5,18	3	c
1999	57	Saucisses cocktail saumon (type "snaki")	Ready to reheat salmon sausage					3,66						4,38	4,08	3	c
1999	87	Cassolette de poissons (plat préparé cuit)	Cooked fish					ND (no positive tube)						ND	ND	3	c
1999	36	Cocktail de fruits de mer précuit congelé	Frozen precooked seafood					1,18						1,00	1,34	3	c
1999	37	Cocktail de fruits de mer précuit congelé	Frozen precooked seafood					1,63						1,87	1,88	3	c
1999	38	Gambas crues congelées	Frozen raw shrimps					-0,13						<0,30	<0,30	3	a
1999	39	Coques (coquillage frais)	Fresh Shellfish					2,66						2,30	2,60	3	a
1999	47	Filet de lieu frais cru	Raw fish					2,38						<1,30	<1,30	3	a
1999	48	Filet de merlan frais cru	Raw fish					1,38						<1,30	<1,30	3	a
1999	50	Saumon fumé	Smoked salmon					>3,04						4,00	4,15	3	b
1999	52	Saumon fumé	Smoked salmon					>4,04						4,13	4,21	3	b
1999	53	Filet d'anon frais cru	Raw fish					0,97						<1,30	<1,30	3	a
1999	54	Filet de grenadier frais cru	Raw fish					1,97						1,30	<1,30	3	a
1999	55	Filet de colin cru congelé	Frozen raw fish					0,32						1,08	1,08	3	a
1999	56	Filet de cabillau cru congelé	Frozen raw fish					0,97						1,15	0,60	3	a
1999	108	Cocktail de fruits de mer précuit congelé	Frozen precooked seafood					0,36						0,60*	0,00	3	c
1999	159	Crevettes cuites surgelées	Frozen cooked shrimps					-0,04						0,30*	0,30	3	c
1999	163	Haddock fumé	Smoked Haddock					ND (no positive tube)						0,26*	0,26	3	b
1999	164	Beignets de gambas cuites	Prawn fritters					ND (no positive tube)						0,60*	1,00	3	c
1999	165	Terrine d'écrevisse	Crayfish terrine					1,48						<1,30	<1,60	3	c
1999	166	Terrine de saumon	Salmon terrine					3,32						3,04	3,30	3	c
1999	167	Crabe farci	Stuffed crab					1,88						2,18	2,18	3	c
1999	168	Pétoncles farcies	Stuffed scallops					ND (no positive tube)						0,30*	<2	3	c
2018	**7683**	**Filets de harengs fumés**	**Smoked herring**	ND		ND		ND (no positive tube)	20	>150		3200		3,51		3	b
									200	16				N'			
2018	**7684**	**Saumon fumé**	**Smoked salmon**	ND		ND		ND (no positive tube)	200	>150		44000		4,64		3	b
									2000	22				N'			
2018	**7685**	**Filets d'anchois marinés (ail, câpres, persil)**	**Marinated anchovy (garlic, capers, parsley)**	ND		ND		ND (no positive tube)	2000	119		230000		5,36		3	b
									20000	7							
2018	**7686**	**Filets de maquereaux fumés**	**Smoked mackerel**	<3		<0,50		<0,50	2	0		<2		<0,30		3	b
									20	0							
2018	**7687**	**Saumon fumé mariné (aneth-citron)**	**Marinated smoked salmon (dill-lemon)**	<3		<0,50		<0,50	2	0		<2		<0,30		3	b
									20	0							
2018	**7688**	**Seiche marinée (ail-persil)**	**Marinated cuttlefish (garlic-parsley)**	<3		<0,50		<0,50	20	0		<20		<1,30		3	b
									200	0							

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SEAFOOD																		
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				MPN / g		log MPN		Result kept for interpretation	Dilution	CFU/plate		CFU/g		log CFU/g			
				rep 1	rep 2	rep 1	rep 2			rep 1	rep 2	rep 1	rep 2	rep 1 (kept for interpretation)	rep 2		
2018	**8045**	**Saumon fumé**	**Smoked salmon**	930		2,97		2,97	20	37		760		2,88		3	b
									200	5							
2018	**8046**	**Maquereau au poivre**	**Marinated mackerel with pepper**	15000		4,18		4,18	200	16		3100		3,49		3	b
				[4400;51000]		[3,64;4,71]		[3,64;4,71]	2000	1							
2018	**8047**	**Hareng fumé**	**Smoked herring**	24000		4,38		4,38	2000	20		36000		4,56		3	b
									20000	0							
2018	**8282**	**Saumon fumé**	**Smoked salmon**	<3		<0,5		<0,5	20	184		3700		3,57		3	b
									200	21							
2018	**8283**	**Haddock fumé**	**Smoked haddock**	<3		<0,5		<0,5	2000	23		44000		4,64		3	b
									20000	1							
2018	**8424**	**Anchois marinés**	**Marinated anchovies**	740		2,87		2,87	2	19		50		1,70		3	b
				[180;3000]		[2,26;3,48]		[2,26;3,48]	20	8							
2018	**8425**	**Saumon fumé**	**Smoked salmon**	4200		3,62		3,62	200	18		3500		3,54		3	b
									2000	1							

EGG PRODUCTS																			
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				MPN / g		log MPN		Result kept for interpretation	Dilution	CFU/plate		CFU/g		log CFU/g				
				rep 1	rep 2	rep 1	rep 2			rep 1	rep 2	rep 1	rep 2	rep 1 (kept for interpretation)	rep 2			
1999	91	Charlotte poire congelée	Frozen pear charlotte cake					1,97						2,28	2,30	4	b
1999	140	Choux chantilly	Pastry with whipped cream					1,88						1,45	1,46	4	b
1999	141	Mille-feuilles chantilly	Pastry with whipped cream					1,97						1,38	1,66	4	b
1999	142	Pâtisserie Paris - Brest	Paris-Brest (French pastry)					0,97						1,26	1,26	4	b
1999	147	Choux chantilly	Pastry with whipped cream					3,38						2,86	2,86	4	b
1999	24	Religieuse café (crème pâtissière)	Pastry with pastry cream					0,46						1,60	1,69	4	b
1999	101	Mille feuilles (crème pâtissière)	Pastry with pastry cream					0,63						0,30*	0,30	4	b
1999	102	Gland (crème pâtissière)	Pastry with pastry cream					1,86						<3,30	<3,30	4	b
1999	103	Religieuse (crème pâtissière)	Pastry with pastry cream					-0,04						1,78	1,45	4	b
1999	104	Aspic d'oeuf dur	Ready to eat egg product					2,63						2,60	2,90	4	c
1999	117	Mayonnaise	Mayonnaise					0,88						1,30	1,26	4	a
1999	143	Mille feuilles à la crème (crème pâtissière)	Pastry with pastry cream					3,63						4,10	4,06	4	b
1999	144	Eclair vanille (crème pâtissière)	Pastry with pastry cream					3,18						4,35	4,36	4	b
1999	148	Crème aux oeufs	Egg cream					4,66						4,91	4,87	4	a
1999	149	Mayonnaise	Mayonnaise					3,66						3,34	3,51	4	a
1999	152	Oeuf en gelée	Ready to eat egg product					2,46						3,30	3,30	4	c
1999	153	Mayonnaise	Mayonnaise					>3,04						3,22	3,19	4	a
1999	154	Crème pâtissière	Pastry cream					3,63						3,64	3,60	4	a
1999	155	Flan	Pudding					0,36						0,30*	0,60	4	a
1999	121	Pâte feuilletée crue	Raw puff pastry					0,56						1,30	1,30	4	a
1999	124	Feuilletage beurre (crue)	Raw puff pastry					0,56						0,90	0,90	4	a
2007	213	Omelette nature	Omelet	93	23	1,97	1,36	1,97	2	12	15	240	160	2,38	2,20	4	c
									20	3	3			Ne			
2007	214	Paris Brest	Paris-Brest (French pastry)	1500	750	3,18	2,88	3,18	20	0	0	<20	<20	<1,30	<1,30	4	b
									200	0	0						
2007	215	Coule d'œuf	Liquid egg	9300	7500	3,97	3,88	3,97	200	32	26	32000	26000	4,51	4,41	4	a
									2000	3	3						
2007	302	Flan	Pudding	11000	11000	4,04	4,04	4,04	20	>150	>150	14000	15200	4,15	4,18	4	a
									200	70	76			N'			
2007	371	Crème anglaise	Custard	93	93	1,97	1,97	1,97	2	21	16	42	31	1,62	1,49	4	a
									20	2	1						
2007	372	Flan	Pudding	430	230	2,63	2,36	2,63	2	86	104	180	220	2,26	2,34	4	a
									20	11	16						
2007	373	Coule d'œuf	Liquid egg	930	230	2,97	2,36	2,97	20	20	19	380	380	2,58	2,58	4	a
									200	1	2						
2007	374	Omelette	Omelet	23	43	1,36	1,63	1,36	2	30	21	56	38	1,75	1,58	4	c
									20	1	0						
2007	375	Mayonnaise	Mayonnaise	930	430	2,97	2,63	2,97	2	204	187	500	380	2,70	2,58	4	a
									20	25	19			N'			
2007	376	Crème anglaise	Custard	930	2400	2,97	3,38	2,97	20	62	59	1200	1200	3,08	3,08	4	a
									200	2	6						

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EGG PRODUCTS																		
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				MPN / g		log MPN		Result kept for interpretation	Dilution	CFU/plate		CFU/g		log CFU/g			
				rep 1	rep 2	rep 1	rep 2			rep 1	rep 2	rep 1	rep 2	rep 1 (kept for interpretation)	rep 2		
2007	377	Millefeuille	Pastry	23	4	1,36	0,6	1,36	2	1	3	2	6	0,30*	0,78	4	b
									20	0	0						
2018	**7689**	**Tortilla aux oignons**	**Omelet with onions**	4		0,60		0,60	2	0		<2		<0,30		4	c
									20	0							
2018	**7690**	**Tortilla**	**Omelet**	4		0,60		0,60	2	0		<2		<0,30		4	c
									20	0							
2018	**8207**	**Tortilla aux oignons**	**Omelet with onions**	460000		5,66		5,66	200	>150		300000		5,48		4	c
									2000	148				N'			

VEGETABLES AND OTHERS																		
Analysis date	Sample N°	Product (French name)	Product	Reference method : ISO 4831♦					Alternative method : 3M™ Petrifilm™ HSCC (PHSCC)							Category	Type
				MPN / g		log MPN		Result kept for interpretation	Dilution	CFU/plate		CFU/g		log CFU/g			
				rep 1	rep 2	rep 1	rep 2			rep 1	rep 2	rep 1	rep 2	rep 1 (kept for interpretation)	rep 2		
1999	4	Farine	Flour					<1,55						<1,30	<1,30	5	c
1999	5	Farine	Flour					<1,55						<1,30	<1,30	5	c
1999	19	Cardamome (épice)	Cardamom					-0,13						0,30*	<0,30	5	c
1999	20	Epice chinoise	Chinese spices					1,18						<2,30	<2,30	5	c
1999	26	Chocolat fourré	Filled chocolate					-0,44						<0,30	<0,30	5	c
1999	33	Farine	Flour					0,56						<1,30	<1,30	5	c
1999	44	Lapacho (écorce d'arbre pour infusion)	Lapacho (bark for infusion)					1,97						2,00	2,08	5	c
1999	45	Tilleul (feuilles pour infusion)	Linden (for infusion)					1,38						<2,30	<2,30	5	c
1999	74	Courgettes en rondelles précuites congelées	Frozen cooked zucchini					0,58						0,30*	0,78	5	a
1999	75	Petits pois précuits congelés	Frozen cooked peas					1,88						1,96	2,07	5	a
1999	76	Légumes potage précuits congelés	Frozen cooked vegetables					>3,04						1,60	2,20	5	a
1999	77	Macédoine précuite congelée	Frozen cooked vegetables					0,63						1,85	1,69	5	b
1999	78	Ratatouille précuite congelée	Frozen cooked vegetables					ND(tubes broken)						2,09	2,10	5	b
1999	79	Brocolis précuits congelés	Frozen cooked broccoli					ND(tubes broken)						0,60*	<0,30	5	a
1999	80	Haricots verts précuits congelés	Frozen cooked green beans					1,38						1,38	1,45	5	a
1999	81	Ratatouille précuite congelée	Frozen cooked vegetables					1,38						2,05	1,91	5	b
1999	82	Brocolis précuits congelés	Frozen cooked broccoli					-0,04						<0,30	<0,30	5	a
1999	83	Farine	Flour					-0,44						<1,30	<1,30	5	c
1999	109	Haricots plats précuits Légumes congelés	Frozen cooked vegetables					2,32						2,45	2,62	5	a
1999	110	Flageolet précuit Légumes congelés	Frozen cooked vegetables					0,63						1,26	1,45	5	a
1999	111	Epinard en branche précuit Légumes congelés	Frozen cooked vegetables					3,63						3,45	3,51	5	a
1999	112	Fonds d'artichaud précuits Légumes congelés	Frozen cooked vegetables					1,18						0,78*	0,60	5	a
1999	125	Anis vert (épice)	Green anise (spice)					<0,48						2,30	2,30	5	c
1999	126	Curry (épice)	Curry (spice)					3,38						3,87	3,81	5	c
1999	127	Coriandre (épice)	Coriander (spice)					1,56						1,78	2,08	5	c
1999	128	Fenouil (épice)	Fennel (spice)					<-0,52						<0,30	0,30	5	c
1999	129	Marjolaine (épice)	Marjoram (spice)					1,63						2,00	<2,30	5	c
1999	130	Poivre blanc	White pepper					0,96						1,60	1,90	5	c
1999	131	Poivre noir	Black pepper					0,63						<1,30	<1,30	5	c
1999	132	Sésame (graine)	Sesam (seeds)					0,36						<1,30	<1,30	5	c
1999	133	Légumes congelés Poelée parisienne précuite	Frozen cooked vegetables					1,18						0,90	0,90	5	b
1999	134	Légumes congelés Poelée forestière précuite	Frozen cooked vegetables					2,38						3,10	3,12	5	b
1999	135	Légumes congelés Poelée bretonne précuite	Frozen cooked vegetables					0,36						0,30*	0,78	5	b
1999	136	Légumes congelés Poelée landaise précuite	Frozen cooked vegetables					0,96						1,34	1,46	5	b
1999	137	Légumes congelés Ratatouille précuite	Frozen cooked vegetables					0,18						0,78*	0,78	5	b
1999	138	Légumes congelés Galette ptt légumes précuite	Frozen cooked vegetables					1,38						1,30	<1,30	5	b
1999	139	Légumes congelés Epinards hachés précuits	Frozen cooked vegetables					1,38						1,71	1,64	5	a
1999	160	Choux fleur congelé précuit	Frozen cooked cauliflower					2,38						2,19	2,24	5	a
1999	161	Petits pois congelés précuits	Frozen cooked peas					2,38						3,10	3,17	5	a
1999	162	Haricots verts congelés précuits	Frozen cooked green beans					3,18						2,83	3,07	5	a

[xxx]: confidence interval

♦ Analyses performed according to the COFRAC accreditation

Appendix 5 - Relative trueness study: calculations

Category	N°sample	Product	Log cfu/g		Average	Difference	Alternative method		Average <4 CFU/ plate	Difference <4 CFU/ plate	Average corrected values	Difference Corrected values
			Reference method	Alternative method			<4 CFU/ plate	<or> threshold corrected values				
1	40	Frozen mechanically separated poultry meat	3,97	3,11	3,54	-0,86			#N/A		#N/A	
	41	Frozen mechanically separated poultry meat	3,38	2,44	2,91	-0,94			#N/A		#N/A	
	42	Frozen mechanically separated poultry meat	3,63	3,98	3,80	0,34			#N/A		#N/A	
	100	Raw duck gizzard	3,04		#N/A				#N/A		#N/A	
	118	Raw beef tongue	3,63	3,69	3,66	0,06			#N/A		#N/A	
	119	Raw pork meat	1,97	1,79	1,88	-0,18			#N/A		#N/A	
	1	White pudding	1,32		#N/A			5,48	#N/A		3,40	4,16
	2	Ham	3,04	3,68	3,36	0,64			#N/A		#N/A	
	3	Ham	0,87	1,30	1,09	0,43			#N/A		#N/A	
	9	Duck pâté	2,04		#N/A			5,48	#N/A		3,76	3,44
	14	Rillettes	1,04	1,20	1,12	0,16			#N/A		#N/A	
	58	Ham	4,04		#N/A			3,86	#N/A		3,95	-0,18
	59	Black apple pudding	2,18	2,72	2,45	0,55			#N/A		#N/A	
	85	Ham			#N/A				#N/A		#N/A	
	105	Pâté	4,38	4,83	4,60	0,45			#N/A		#N/A	
	115	Liver pâté	2,63	3,18	2,91	0,55			#N/A		#N/A	
	116	Pâté with pepper	2,63	3,01	2,82	0,37			#N/A		#N/A	
	120	White pudding	3,18	3,51	3,35	0,34			#N/A		#N/A	
	122	Ham	4,18	4,58	4,38	0,40			#N/A		#N/A	
	88	Cooked pork meat	4,04		#N/A			3,11	#N/A		3,58	-0,93
	146	Patties with tomatoes	-0,04		#N/A			-0,70	#N/A		-0,37	-0,66
	209	Pâté	2,36	2,56	2,46	0,20			#N/A		#N/A	
	210	Liver pâté	1,36	2,30	1,83	0,94			#N/A		#N/A	
	211	Pâté	2,36	2,60	2,48	0,24			#N/A		#N/A	
	212	Duck rillettes	2,36	3,04	2,70	0,68			#N/A		#N/A	
	299	Grated smoked ham	0,95	3,15	2,05	2,20			#N/A		#N/A	
	300	Diced ham	0,48		#N/A			3,76	#N/A		2,12	3,28
	301	Rillettes	1,48		#N/A			3,90	#N/A		2,69	2,42
	369	Pâté en croûte	-0,52		#N/A			0,30	#N/A		-0,11	0,82
	370	Cooked roast pork	1,04		#N/A		0,60		0,82	-0,44	#N/A	
	732	Pâté	-0,52		#N/A			2,00	#N/A		0,74	2,52
	733	Liver pâté	-0,52		#N/A			2,20	#N/A		0,84	2,72
	734	Chorizo	1,63		#N/A			-0,7	#N/A		0,47	-2,33
	106	Cooked muzzle	4,38	4,88	4,63	0,50			#N/A		#N/A	
	107	Cooked roast	4,18	3,51	3,85	-0,66			#N/A		#N/A	
	7	Pizza with goat cheese and bacon	0,56	1,34	0,95	0,79			#N/A		#N/A	
	8	Ravioli with nuts	1,96		#N/A			1,30	#N/A		1,63	-0,66
	12	Cooked beef meat	0,87	1,71	1,29	0,84			#N/A		#N/A	
	13	Cooked beef meat	0,56	1,60	1,08	1,05			#N/A		#N/A	
	17	Cooked pork meat	-0,52		#N/A			0,60	#N/A		0,04	1,12
	30	Ready to reheat	0,36		#N/A		0,60		0,48	0,24	#N/A	
	31	Pizza with ham and mushroom	2,18	3,15	2,66	0,98			#N/A		#N/A	
	49	Cooked beef meat	3,04	3,48	3,26	0,44			#N/A		#N/A	
	145	Cooked beef meat	0,18		#N/A		0,30		0,24	0,12	#N/A	
	150	Cooked kidney	4,97	5,14	5,05	0,17			#N/A		#N/A	
	151	Beef with carrots	2,56	2,87	2,71	0,32			#N/A		#N/A	
	156	Cooked meat (paupiette)	2,63	2,56	2,60	-0,07			#N/A		#N/A	
	157	Stuffed cabbage	1,18	1,30	1,24	0,12			#N/A		#N/A	
	158	Stuffed tomatoes	2,38	2,26	2,32	-0,12			#N/A		#N/A	
Average category 1						**0,35**						
Standard deviation of differences category 1						**0.59**						
2	15	Raw milk	4,04		#N/A			4,02	#N/A		4,03	-0,02
	7691	**Pasteurized half skimmed milk**	-0,50		#N/A			3,38	#N/A		1,44	3,88
	7692	**Pasteurized half skimmed milk**	3,63		#N/A				#N/A		#N/A	
	7693	**Half skimmed milk powder**	0,60	1,81	1,21	1,21			#N/A		#N/A	
	7694	**Skimmed milk powder**	1,95		#N/A				#N/A		#N/A	
	7695	Raw milk	1,95	2,69	2,32	0,74			#N/A		#N/A	
	7696	Raw milk	3,04	2,65	2,85	-0,39			#N/A		#N/A	
	8058	**Half-skimmed pasteurized milk**	3,66	3,62	3,64	-0,04			#N/A		#N/A	
	8059	**Half-skimmed pasteurized milk**	4,66	5,04	4,85	0,38			#N/A		#N/A	
	35	Brie (cheese)	0,56		#N/A			0,30	#N/A		0,43	-0,26
	92	Cheese	1,56		#N/A			0,30	#N/A		0,93	-1,26
	93	Cheese	1,96	2,72	2,34	0,76			#N/A		#N/A	
	94	Cheese	1,96		#N/A			2,30	#N/A		2,13	0,34
	95	Cheese	0,56		#N/A			0,30	#N/A		0,43	-0,26
	96	Cheese	0,18		#N/A			1,30	#N/A		0,74	1,12
	97	Pasteurized milk cheese	1,63	2,02	1,82	0,38			#N/A		#N/A	
	98	Cheese	3,63		#N/A				#N/A		#N/A	
	99	Cheese	0,96	0,90	0,93	-0,06			#N/A		#N/A	
	114	Fresh cheese	2,18	2,20	2,19	0,03			#N/A		#N/A	
	8315	**Raw milk cheese (Emmental)**	3,18	3,56	3,37	0,38			#N/A		#N/A	
	25	Frozen dairy dessert	1,32	1,41	1,37	0,09			#N/A		#N/A	
	32	Butter cream	0,97	1,00	0,98	0,03			#N/A		#N/A	
	60	Frozen nougat	-1,52		#N/A			-0,70	#N/A		-1,11	0,82
	90	Frozen Christmas log	1,97	1,85	1,91	-0,12			#N/A		#N/A	
	113	Butter	3,63	3,51	3,57	-0,12			#N/A		#N/A	
	123	Frozen nougat	1,97	1,79	1,88	-0,18			#N/A		#N/A	
	16	Frozen pear dessert	2,66	2,66	2,66	-0,01			#N/A		#N/A	
	7697	Roquefort (raw ewe milk cheese)	-0,50		#N/A			-0,70	#N/A		-0,60	-0,20
	7698	Camembert (raw cow milk cheese)			#N/A				#N/A		#N/A	
Average category 2						**0,19**						
Standard deviation of differences category 2						**0,42**						

Category	N°sample	Product	Log cfu/g		Average	Difference	Alternative method		Average <4 CFU/ plate	Difference <4 CFU/ plate	Average corrected values	Difference Corrected values
			Reference method	Alternative method			<4 CFU/ plate	<or> threshold corrected values				
3	10	Scallops	0,56	1,15	0,85	0,59			#N/A		#N/A	
	34	Raw and frozen shrimps with garlic and herbs	4,04		#N/A				#N/A		#N/A	
	38	Frozen raw shrimps	-0,13		#N/A			-0,70	#N/A		-0,42	-0,57
	39	Fresh Shellfish	2,66	2,30	2,48	-0,36			#N/A		#N/A	
	47	Raw fish	2,38		#N/A			0,30	#N/A		1,34	-2,08
	48	Raw fish	1,38		#N/A			0,30	#N/A		0,84	-1,08
	53	Raw fish	0,97		#N/A			0,30	#N/A		0,63	-0,67
	54	Raw fish	1,97	1,30	1,63	-0,67			#N/A		#N/A	
	55	Frozen raw fish	0,32	1,08	0,70	0,76			#N/A		#N/A	
	56	Frozen raw fish	0,97	1,15	1,06	0,18			#N/A		#N/A	
	50	Smoked salmon	4,04		#N/A			4,00	#N/A		4,02	-0,04
	52	Smoked salmon	5,04		#N/A			4,13	#N/A		4,58	-0,91
	163	Smoked Haddock			#N/A				#N/A		#N/A	
	7683	**Smoked herring**			#N/A				#N/A		#N/A	
	7684	**Smoked salmon**			#N/A				#N/A		#N/A	
	7685	**Marinated anchovy (garlic, capers, parsley)**			#N/A				#N/A		#N/A	
	7686	**Smoked mackerel**	-0,50		#N/A			-0,70	#N/A		-0,60	-0,20
	7687	**Marinated smoked salmon (dill-lemon)**	-0,50		#N/A			-0,70	#N/A		-0,60	-0,20
	7688	**Marinated cuttlefish (garlic-parsley)**	-0,50		#N/A			0,30	#N/A		-0,10	0,80
	8045	**Smoked salmon**	2,97	2,88	2,92	-0,09			#N/A		#N/A	
	8046	**Marinated mackerel with pepper**	4,18	3,49	3,83	-0,68			#N/A		#N/A	
	8047	**Smoked herring**	4,38	4,56	4,47	0,18			#N/A		#N/A	
	8282	**Smoked salmon**	-0,50		#N/A			3,57	#N/A		1,53	4,07
	8283	**Smoked haddock**	-0,50		#N/A			4,64	#N/A		2,07	5,14
	8424	**Marinated anchovies**	2,87	1,70	2,28	-1,17			#N/A		#N/A	
	8425	**Smoked salmon**	3,62	3,54	3,58	-0,08			#N/A		#N/A	
	6	Pizza with salmon	0,56		#N/A		0,30		0,43	-0,26	#N/A	
	11	Cooked fish	-0,52		#N/A			-0,70	#N/A		-0,61	-0,18
	18	Cooked shrimps	0,56		#N/A			-0,70	#N/A		-0,07	-1,26
	51	Cooked fish	5,04		#N/A			5,06	#N/A		5,05	0,02
	57	Ready to reheat salmon sausage	3,66	4,38	4,02	0,72			#N/A		#N/A	
	87	Cooked fish			#N/A				#N/A		#N/A	
	36	Frozen precooked seafood	1,18	1,00	1,09	-0,18			#N/A		#N/A	
	37	Frozen precooked seafood	1,63	1,87	1,75	0,24			#N/A		#N/A	
	108	Frozen precooked seafood	0,36		#N/A		0,60		0,48	0,24	#N/A	
	159	Frozen cooked shrimps	-0,04		#N/A		0,30		#N/A		0,13	0,34
	164	Prawn fritters			#N/A				#N/A		#N/A	
	165	Crayfish terrine	1,48		#N/A			0,30	#N/A		0,89	-1,18
	166	Salmon terrine	3,32	3,04	3,18	-0,28			#N/A		#N/A	
	167	Stuffed crab	1,88	2,18	2,03	0,31			#N/A		#N/A	
	168	Stuffed scallops			#N/A				#N/A		#N/A	
Average category 3						**-0,04**						
Standard deviation of differences category 3						**0,55**						
4	117	Mayonnaise	0,88	1,30	1,09	0,43			#N/A		#N/A	
	148	Egg cream	4,66	4,91	4,79	0,25			#N/A		#N/A	
	149	Mayonnaise	3,66	3,34	3,50	-0,32			#N/A		#N/A	
	153	Mayonnaise	4,04		#N/A			3,22	#N/A		3,63	-0,82
	154	Pastry cream	3,63	3,64	3,64	0,01			#N/A		#N/A	
	155	Pudding	0,36		#N/A		0,30		0,33	-0,06	#N/A	
	121	Raw puff pastry	0,56	1,30	0,93	0,74			#N/A		#N/A	
	124	Raw puff pastry	0,56	0,90	0,73	0,35			#N/A		#N/A	
	215	Liquid egg	3,97	4,51	4,24	0,54			#N/A		#N/A	
	302	Pudding	4,04	4,15	4,10	0,11			#N/A		#N/A	
	371	Custard	1,97	1,62	1,80	-0,35			#N/A		#N/A	
	372	Pudding	2,63	2,26	2,45	-0,37			#N/A		#N/A	
	373	Liquid egg	2,97	2,58	2,78	-0,39			#N/A		#N/A	
	375	Mayonnaise	2,97	2,70	2,84	-0,27			#N/A		#N/A	
	376	Custard	2,97	3,08	3,03	0,11			#N/A		#N/A	
	91	Frozen pear charlotte cake	1,97	2,28	2,12	0,30			#N/A		#N/A	
	140	Pastry with whipped cream	1,88	1,45	1,66	-0,43			#N/A		#N/A	
	141	Pastry with whipped cream	1,97	1,38	1,67	-0,59			#N/A		#N/A	
	142	Paris-Brest (French pastry)	0,97	1,26	1,11	0,29			#N/A		#N/A	
	147	Pastry with whipped cream	3,38	2,86	3,12	-0,52			#N/A		#N/A	
	24	Pastry with pastry cream	0,46	1,60	1,03	1,14			#N/A		#N/A	
	101	Pastry with pastry cream	0,63		#N/A		0,30		0,47	-0,33	#N/A	
	102	Pastry with pastry cream	1,86		#N/A			2,30	#N/A		2,08	0,44
	103	Pastry with pastry cream	-0,04	1,78	0,87	1,81			#N/A		#N/A	
	143	Pastry with pastry cream	3,63	4,10	3,87	0,47			#N/A		#N/A	
	144	Pastry with pastry cream	3,18	4,35	3,76	1,17			#N/A		#N/A	
	214	Paris-Brest (French pastry)	3,18		#N/A			0,30	#N/A		1,74	-2,88
	377	Pastry	1,36		#N/A		0,30		0,83	-1,06	#N/A	
	104	Ready to eat egg product	2,63	2,60	2,62	-0,03			#N/A		#N/A	
	152	Ready to eat egg product	2,46	3,30	2,88	0,84			#N/A		#N/A	
	213	Omelet	1,97	2,38	2,18	0,41			#N/A		#N/A	
	374	Omelet	1,36	1,75	1,56	0,39			#N/A		#N/A	
	7689	**Omelet with onions**	0,60		#N/A			-0,70	#N/A		-0,05	-1,30
	7690	**Omelet**	0,60		#N/A			-0,70	#N/A		-0,05	-1,30
	8207	**Omelet with onions**	5,66	5,48	5,57	-0,19			#N/A		#N/A	
Average category 4						**0,22**						
Standard deviation of differences category 4						**0,58**						

Category	N°sample	Product	Log cfu/g		Average	Difference	Alternative method		Average <4 CFU/ plate	Difference <4 CFU/ plate	Average corrected values	Difference Corrected values
			Reference method	Alternative method			<4 CFU/ plate	<or> threshold corrected values				
5	74	Frozen cooked zucchini	0,58		#N/A		0,30		0,44	-0,28	#N/A	
	75	Frozen cooked peas	1,88	1,96	1,92	0,08			#N/A		#N/A	
	76	Frozen cooked vegetables	4,04		#N/A				#N/A		#N/A	
	79	Frozen cooked broccoli			#N/A				#N/A		#N/A	
	80	Frozen cooked green beans	1,38	1,38	1,38	0,00			#N/A		#N/A	
	82	Frozen cooked broccoli	-0,04		#N/A			-0,70	#N/A		-0,37	-0,66
	109	Frozen cooked vegetables	2,32	2,45	2,38	0,12			#N/A		#N/A	
	110	Frozen cooked vegetables	0,63	1,26	0,94	0,62			#N/A		#N/A	
	111	Frozen cooked vegetables	3,63	3,45	3,54	-0,19			#N/A		#N/A	
	112	Frozen cooked vegetables	1,18		#N/A		0,78		0,98	-0,40	#N/A	
	139	Frozen cooked vegetables	1,38	1,71	1,54	0,33			#N/A		#N/A	
	160	Frozen cooked cauliflower	2,38	2,19	2,29	-0,19			#N/A		#N/A	
	161	Frozen cooked peas	2,38	3,10	2,74	0,72			#N/A		#N/A	
	162	Frozen cooked green beans	3,18	2,83	3,00	-0,35			#N/A		#N/A	
	77	Frozen cooked vegetables	0,63	1,85	1,24	1,22			#N/A		#N/A	
	78	Frozen cooked vegetables			#N/A				#N/A		#N/A	
	81	Frozen cooked vegetables	1,38	2,05	1,72	0,67			#N/A		#N/A	
	133	Frozen cooked vegetables	1,18	0,90	1,04	-0,27			#N/A		#N/A	
	134	Frozen cooked vegetables	2,38	3,10	2,74	0,72			#N/A		#N/A	
	135	Frozen cooked vegetables	0,36		#N/A		0,30		0,33	-0,06	#N/A	
	136	Frozen cooked vegetables	0,96	1,34	1,15	0,38			#N/A		#N/A	
	137	Frozen cooked vegetables	0,18		#N/A		0,78		0,48	0,60	#N/A	
	138	Frozen cooked vegetables	1,38	1,30	1,34	-0,08			#N/A		#N/A	
	4	Flour	0,55		#N/A			0,30	#N/A		0,43	-0,25
	5	Flour	0,55		#N/A			0,30	#N/A		0,43	-0,25
	19	Cardamom	-0,13		#N/A		0,30		0,08	0,43	#N/A	
	20	Chinese spices	1,18		#N/A			1,30	#N/A		1,24	0,12
	26	Filled chocolate	-0,44		#N/A			-0,70	#N/A		-0,57	-0,26
	33	Flour	0,56		#N/A			0,30	#N/A		0,43	-0,26
	44	Lapacho (bark for infusion)	1,97	2,00	1,98	0,03			#N/A		#N/A	
	45	Linden (for infusion)	1,38		#N/A			1,30	#N/A		1,34	-0,08
	83	Flour	-0,44		#N/A			0,30	#N/A		-0,07	0,74
	125	Green anise (spice)	-0,52		#N/A			2,30	#N/A		0,89	2,82
	126	Curry (spice)	3,38	3,87	3,62	0,49			#N/A		#N/A	
	127	Coriander (spice)	1,56	1,78	1,67	0,22			#N/A		#N/A	
	128	Fennel (spice)	-1,52		#N/A			-0,70	#N/A		-1,11	0,82
	129	Marjoram (spice)	1,63	0,90	1,27	-0,73			#N/A		#N/A	
	130	White pepper	0,96	1,60	1,28	0,64			#N/A		#N/A	
	131	Black pepper	0,63		#N/A			0,30	#N/A		0,47	-0,33
	132	Sesam (seeds)	0,36		#N/A			0,30	#N/A		0,33	-0,06
Average category 5							**0,22**					
Standard deviation of differences category 5							**0,47**					
Average all categories				Dall		**0,22**						
Standard deviation of differences all categories				SDAll		**0,54**						

	n all	109			
β=95%	T(0,05;70)=	1,98			
		1,08	Upper limit	Lower limit	Linear
	Average (minimal value)	**-2,00**	1,30	-0,86	0,22
	Average (maximal value)	**10,00**	1,30	-0,86	0,22

Category	n	T(0,05;70)=	SD	ISO formula	Bias	Lower limit (95%)	Upper limit (95%)
1	31	2,04	0,59	1,23	0,35	-0,87	1,58
2	16	2,13	0,42	0,92	0,19	-0,73	1,12
3	15	2,14	0,55	1,21	-0,04	-1,25	1,17
4	27	2,06	0,58	1,21	0,22	-1,00	1,43
5	20	2,09	0,47	1,00	0,22	-0,78	1,22
All categories	109	1,98	0,54	1,08	0,22	-0,86	1,30

Appendix 6 - Accuracy profile study: raw data

Matrix	Strain	Level	N° sample	Reference method: ISO 4831♦		Alternative method: 3M Petrifilm HSCC 30°C			
				MPN	log MPN	Dilution	cfu/plate	cfu/g	log cfu/g
Ground beef Batch 2 Aerobic mesophilic flora: 1,1 10^4 CFU/g	*Enterobacter cloacae 128*	1	634	240	2,38	2	143	280	2,45
						20	12		
			635	240	2,38	2	150	300	2,48
						20	17		
			636	460	2,66	2	147	290	2,46
						20	11		
			637	460	2,66	2	127	270	2,43
						20	22		
			638	240	2,38	2	105	220	2,34
						20	13		
		2	639	11000	4,04	200	31	6400	3,81
						2000	4		
			640	4600	3,66	200	32	6200	3,79
						2000	2		
			641	2400	3,38	200	49	9500	3,98
						2000	3		
			642	4600	3,66	200	24	5500	3,74
						2000	6		
			643	4600	3,66	200	33	6900	3,84
						2000	5		
		3	644	24000	4,38	2000	34	67000	4,83
						20000	3		
			645	110000	5,04	2000	38	73000	4,86
						20000	2		
			646	110000	5,04	2000	46	98000	4,99
						20000	8		
			647	46000	4,66	2000	45	91000	4,96
						20000	5		
			648	46000	4,66	2000	40	80000	4,90
						20000	4		
Ground beef Batch 2 Aerobic mesophilic flora: 3,4 10^3CFU/g		1	649	240	2,38	2	142	290	2,46
						20	18		
			650	460	2,66	2	132	260	2,41
						20	13		
			651	240	2,38	2	129	260	2,41
						20	14		
			652	240	2,38	2	122	240	2,38
						20	9		
			653	460	2,66	2	141	280	2,45
						20	14		
		2	654	4600	3,66	200	23	4700	3,67
						2000	3		
			655	4600	3,66	200	47	8700	3,94
						2000	1		
			656	4600	3,66	200	34	7100	3,85
						2000	5		
			657	4600	3,66	200	43	8500	3,93
						2000	4		
			658	4600	3,66	200	36	7300	3,86
						2000	4		
		3	659	46000	4,66	2000	36	67000	4,83
						20000	1		
			660	24000	4,38	2000	32	67000	4,83
						20000	5		
			661	24000	4,38	2000	32	65000	4,81
						20000	4		
			662	46000	4,66	2000	35	69000	4,84
						20000	3		
			663	110000	5,04	2000	31	64000	4,81
						20000	4		

♦ Analyses performed according to the COFRAC accreditation

Matrix	N°sample	Reference method: ISO 4831♦		Alternative method: 3M Petrifilm HSCC 30°C			
		MPN	log MPN	Dilution	cfu/plate	cfu/g	log cfu/g
Pasteurized whole milk Batch 1 Aerobic mesophilic flora: 20 CFU/g	833	240	2,38	2	146	300	2,48
				20	17		
	834	460	2,66	2	142	290	2,46
				20	19		
	835	460	2,66	2	134	270	2,43
				20	12		
	836	240	2,38	2	119	240	2,38
				20	14		
	837	240	2,38	2	103	210	2,32
				20	11		
	838	9300	3,97	200	40	7800	3,89
				2000	3		
	839	9300	3,97	200	51	11000	4,04
				2000	10		
	840	9300	3,97	200	60	11000	4,04
				2000	3		
	841	2300	3,36	200	48	10000	4,00
				2000	8		
	842	24000	4,38	200	51	9800	3,99
				2000	3		
	843	93000	4,97	2000	34	69000	4,84
				20000	4		
	844	43000	4,63	2000	60	110000	5,04
				20000	1		
	845	43000	4,63	2000	43	82000	4,91
				20000	2		
	846	43000	4,63	2000	41	78000	4,89
				20000	2		
	847	93000	4,97	2000	47	91000	4,96
				20000	3		
Pasteurized whole milk Batch 2 Aerobic mesophilic flora: <10 CFU/g	848	93	1,97	2	139	280	2,45
				20	13		
	849	460	2,66	2	129	260	2,41
				20	12		
	850	1100	3,04	2	120	230	2,36
				20	5		
	851	930	2,97	2	137	270	2,43
				20	10		
	852	240	2,38	2	110	220	2,34
				20	13		
	853	9300	3,97	200	44	8500	3,93
				2000	3		
	854	9300	3,97	200	33	6500	3,81
				2000	3		
	855	2300	3,36	200	49	9600	3,98
				2000	4		
	856	2300	3,36	200	35	6500	3,81
				2000	1		
	857	9300	3,97	200	38	8000	3,90
				2000	6		
	858	43000	4,63	2000	41	82000	4,91
				20000	4		
	859	93000	4,97	2000	42	84000	4,92
				20000	4		
	860	75000	4,88	2000	37	76000	4,88
				20000	5		
	861	43000	4,63	2000	31	62000	4,79
				20000	3		
	862	23000	4,36	2000	39	82000	4,91
				20000	6		

♦ Analyses performed according to the COFRAC accreditation

Matrix	N°sample	Reference method: ISO 4831♦		Alternative method: 3M Petrifilm HSCC 30°C			
		MPN	log MPN	Dilution	cfu/plate	cfu/g	log cfu/g
Pasteurized whole liquid egg Batch 1 Aerobic mesophilic flora: 10 CFU/g	1327	150	2,18	2	133	260	2,41
				20	8		
	1328	460	2,66	2	126	260	2,41
				20	17		
	1329	240	2,38	2	133	260	2,41
				20	9		
	1330	240	2,38	2	142	280	2,45
				20	14		
	1331	240	2,38	2	97	190	2,28
				20	8		
	1332	4300	3,63	200	34	6400	3,81
				2000	1		
	1333	24000	4,38	200	42	8500	3,93
				2000	5		
	1334	9300	3,97	200	56	11000	4,04
				2000	4		
	1335	24000	4,38	200	38	8000	3,90
				2000	6		
	1336	9300	3,97	200	61	12000	4,08
				2000	4		
	1337	93000	4,97	2000	36	73000	4,86
				20000	4		
	1338	39000	4,59	2000	50	100000	5,00
				20000	6		
	1339	110000	5,04	2000	44	91000	4,96
				20000	6		
	1340	93000	4,97	2000	48	110000	5,04
				20000	11		
	1341	23000	4,36	2000	52	100000	5,00
				20000	3		
Pasteurized whole liquid egg Batch 2 Aerobic mesophilic flora: <10 CFU/g	1342	240	2,38	2	143	290	2,46
				20	15		
	1343	240	2,38	2	137	280	2,45
				20	15		
	1344	460	2,66	2	140	280	2,45
				20	14		
	1345	240	2,38	20	12	220	2,34
				200	0		
	1346	93	1,97	2	127	250	2,40
				20	11		
	1347	15000	4,18	200	47	10000	4,00
				2000	9		
	1348	9300	3,97	200	48	9300	3,97
				2000	3		
	1349	15000	4,18	200	39	7600	3,88
				2000	3		
	1350	9300	3,97	200	41	9500	3,98
				2000	11		
	1351	15000	4,18	200	55	11000	4,04
				2000	5		
	1352	240000	5,38	2000	48	96000	4,98
				20000	5		
	1353	93000	4,97	2000	48	96000	4,98
				20000	5		
	1354	93000	4,97	2000	58	110000	5,04
				20000	4		
	1355	93000	4,97	2000	52	110000	5,04
				20000	9		
	1356	93000	4,97	2000	51	100000	5,00
				20000	4		

♦ Analyses performed according to the COFRAC accreditation

Matrix	N°sample	Reference method: ISO 4831♦		Alternative method: 3M Petrifilm HSCC 30°C			
		MPN	log MPN	Dilution	cfu/plate	cfu/g rounded number)	log cfu/g
Raw fish fillet Batch 1 Aerobic mesophilic flora: 1,4 10^3 CFU/g	1089	150	2,18	2	>150	380	2,58
				20	19		N'
	1090	240	2,38	2	>150	300	2,48
				20	15		N'
	1091	460	2,66	2	>150	400	2,60
				20	20		N'
	1092	240	2,38	2	>150	320	2,51
				20	16		N'
	1093	460	2,66	2	>150	180	2,26
				20	9		N'
	1094	2300	3,36	200	40	7600	3,88
				2000	2		
	1095	9300	3,97	200	66	13000	4,11
				2000	5		
	1096	4300	3,63	200	54	11000	4,04
				2000	5		
	1097	9300	3,97	200	50	10000	4,00
				2000	5		
	1098	9300	3,97	200	38	8400	3,92
				2000	8		
	1099	150000	5,18	2000	55	100000	5,00
				20000	1		
	1100	240000	5,38	2000	56	120000	5,08
				20000	8		
	1101	150000	5,18	2000	61	120000	5,08
				20000	5		
	1102	150000	5,18	2000	48	93000	4,97
				20000	3		
	1103	93000	4,97	2000	48	98000	4,99
				20000	6		
Raw fish fillet Batch 2 Aerobic mesophilic flora: 3,4 10^3 CFU/g	1104	460	2,66	2	>150	400	2,60
				20	20		N'
	1105	93	1,97	2	148	290	2,46
				20	10		
	1106	150	2,18	2	135	280	2,45
				20	18		
	1107	460	2,66	2	127	250	2,40
				20	12		
	1108	460	2,66	2	143	280	2,45
				20	9		
	1109	24000	4,38	200	35	7600	3,88
				2000	7		
	1110	24000	4,38	200	32	6700	3,83
				2000	5		
	1111	46000	4,66	200	45	8700	3,94
				2000	3		
	1112	4300	3,63	200	44	8500	3,93
				2000	3		
	1113	24000	4,38	200	44	8900	3,95
				2000	5		
	1114	43000	4,63	2000	46	93000	4,97
				20000	5		
	1115	93000	4,97	2000	48	95000	4,98
				20000	4		
	1116	43000	4,63	2000	50	98000	4,99
				20000	4		
	1117	75000	4,88	2000	57	110000	5,04
				20000	6		
	1118	75000	4,88	2000	48	95000	4,98
				20000	4		

♦ Analyses performed according to the COFRAC accreditation

Matrix	N°sample	Reference method: ISO 4831♦		Alternative method: 3M Petrifilm HSCC 30°C			
		MPN	log MPN	Dilution	cfu/plate	cfu/g rounded number)	log cfu/g
Green peas Batch 1 Aerobic mesophilic flora: <10 CFU/g	1462	240	2,38	20	15	330	2,52
				200	3		
	1463	460	2,66	20	14	270	2,43
				200	1		
	1464	1100	3,04	20	25	460	2,66
				200	0		
	1465	1100	3,04	20	19	350	2,54
				200	0		
	1466	240	2,38	20	18	380	2,58
				200	3		
	1467	9300	3,97	200	54	11000	4,04
				2000	6		
	1468	24000	4,38	200	69	14000	4,15
				2000	6		
	1469	4300	3,63	200	75	14000	4,15
				2000	4		
	1470	46000	4,66	200	58	12000	4,08
				2000	7		
	1471	46000	4,66	200	71	14000	4,15
				2000	7		
	1472	93000	4,97	2000	71	140000	5,15
				20000	5		
	1473	93000	4,97	2000	67	130000	5,11
				20000	6		
	1474	150000	5,18	2000	69	130000	5,11
				20000	5		
	1475	150000	5,18	2000	61	120000	5,08
				20000	5		
	1476	43000	4,63	2000	60	120000	5,08
				20000	6		
Green peas Batch 2 Aerobic mesophilic flora: <10 CFU/g	1477	460	2,66	20	6	120	2,08
				200	1	Ne	Ne
	1478	1100	3,04	20	12	220	2,34
				200	0		
	1479	1100	3,04	20	15	310	2,49
				200	2		
	1480	460	2,66	20	9	180	2,26
				200	2	Ne	Ne
	1481	240	2,38	20	8	160	2,20
				200	1	Ne	Ne
	1482	3900	3,59	200	44	8400	3,92
				2000	2		
	1483	4300	3,63	200	50	9300	3,97
				2000	1		
	1484	4300	3,63	200	49	10000	4,00
				2000	7		
	1485	4300	3,63	200	40	7800	3,89
				2000	3		
	1486	7500	3,88	200	51	9800	3,99
				2000	3		
	1487	240000	5,38	2000	43	93000	4,97
				20000	8		
	1488	43000	4,63	2000	44	93000	4,97
				20000	7		
	1489	93000	4,97	2000	43	87000	4,94
				20000	5		
	1490	43000	4,63	2000	36	69000	4,84
				20000	2		
	1491	93000	4,97	2000	54	110000	5,04
				20000	8		

♦ Analyses performed according to the COFRAC accreditation

Appendix 7 - Accuracy profile study: summarized results

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

			Reference method result					Alternative method result				
Sample Name	(Food) item	Level	rep 1	rep 2	rep 3	rep 4	rep 5	rep 1	rep 2	rep 3	rep 4	rep 5
634-638	Ground beef	1	240	240	460	460	240	280	300	290	270	220
649-653	Ground beef	1	240	460	240	240	460	290	260	260	240	280
639-643	Ground beef	2	11000	4600	2400	4600	4600	6400	6200	9500	5500	6900
654-658	Ground beef	2	4600	4600	4600	4600	4600	4700	8700	7100	8500	7300
644-648	Ground beef	3	24000	110000	110000	46000	46000	67000	73000	98000	91000	80000
659-663	Ground beef	3	46000	24000	24000	46000	110000	67000	67000	65000	69000	64000

(Food) Category 2	Dairy products
(Food) Type 2	Liquid milk and milk powder (Pasteurized milk)

			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
833-837	Pasteurized milk	1	240	460	460	240	240	300	290	270	240	210
848-852	Pasteurized milk	1	93	460	1100	930	240	280	260	230	270	220
838-842	Pasteurized milk	2	9300	9300	9300	2300	24000	7800	11000	11000	10000	9800
853-857	Pasteurized milk	2	9300	9300	2300	2300	9300	8500	6500	9600	6500	8000
843-847	Pasteurized milk	3	93000	43000	43000	43000	93000	69000	110000	82000	78000	91000
858-862	Pasteurized milk	3	43000	93000	75000	43000	23000	82000	84000	76000	62000	82000

(Food) Category 3	Seafood products
(Food) Type 3	Raw seafood (Fish fillet)

			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
1089-1093	Raw fish fillet	1	150	240	460	240	460	380	300	400	320	180
1104-1108	Raw fish fillet	1	460	93	150	460	460	400	290	280	250	280
1094-1098	Raw fish fillet	2	2300	9300	4300	9300	9300	7600	13000	11000	10000	8400
1109-1113	Raw fish fillet	2	24000	24000	46000	4300	24000	7600	6700	8700	8500	8900
1114-1118	Raw fish fillet	3	43000	93000	43000	75000	75000	93000	95000	98000	110000	95000
1099-1103	Raw fish fillet	3	150000	240000	150000	150000	93000	100000	120000	120000	93000	98000

(Food) Category 4	Egg products and pastries
(Food) Type 4	Liquid egg (Pasteurized whole liquid egg)

			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
1327-1331	Pasteurized whole liquid egg	1	150	460	240	240	240	260	260	260	280	190
1342-1346	Pasteurized whole liquid egg	1	240	240	460	240	93	290	280	280	220	250
1332-1336	Pasteurized whole liquid egg	2	4300	24000	9300	24000	9300	6400	8500	11000	8000	12000
1347-1351	Pasteurized whole liquid egg	2	15000	9300	15000	9300	15000	10000	9300	7600	9500	11000
1337-1341	Pasteurized whole liquid egg	3	93000	39000	110000	93000	23000	73000	100000	91000	110000	100000
1352-1356	Pasteurized whole liquid egg	3	240000	93000	93000	93000	93000	96000	96000	110000	110000	100000

(Food) Category 5	Vegetables
(Food) Type 5	RTC (Green peas)

			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
1462-1466	Green peas	1	240	460	1100	1100	240	330	270	460	350	380
1477-1481	Green peas	1	460	1100	1100	460	240	130	220	310	180	160
1482-1486	Green peas	2	3900	4300	4300	4300	7500	8400	9300	10000	7800	9800
1467-1471	Green peas	2	9300	24000	4300	46000	46000	11000	14000	14000	12000	14000
1472-1476	Green peas	3	93000	93000	150000	150000	43000	140000	130000	130000	120000	120000
1487-1491	Green peas	3	240000	43000	93000	43000	93000	93000	93000	87000	69000	110000

Appendix 8 – Inclusivity / Exclusivity: raw data

INCLUSIVITY						
Year of analysis	Strain		Origin	PCA	ISO 4831	PHS 30°C (gas producing colonies)
				log CFU/ml	BLBVB	log CFU/ml
1999	1	*Citrobacter diversus* Adria 38	/	9,36	+	<7.3
1999	2	*Citrobacter diversus* CIP 8294	/	9,26	+	<7.3
1999	3	*Citrobacter freundii* Adria 59	/	9,26	+	<7.3
1999	4	*Citrobacter freundii* CIP 5732	/	9,18	+	8,7
1999	5	*Escherichia coli* O157:H7 CIP 103571	Clinic	8,93	+	8,58
1999	6	*Escherichia coli* 1	Sausage	8,64	+	8,45
1999	7	*Escherichia coli* 12	Poultry	8,92	+	8,87
1999	8	*Escherichia coli* 14	Dairy product	9,04	+	9,01
1999	9	*Escherichia coli* CIP 54127	/	9,04	+	9
1999	10	*Enterobacter aerogenes* CIP 103659	/	9,38	+	9,21
1999	11	*Enterobacter aerogenes* CIP 6086	/	9,3	+	9,02
1999	12	*Pantoea agglomerans* Adria 11	Cheese	8,83	+	8,78
1999	13	*Enterobacter cloacae* Adria 10	Raw milk	9,11	+	8,86
1999	14	*Enterobacter cloacae* Adria 58	/	9,41	+	9,02
1999	15	*Enterobacter sakazakii* Adria 22	/	8,63	+	8,99
1999	16	*Enterobacter sakazakii* Adria 7	/	9,34	+	9,11
1999	17	*Hafnia alvei* 168	Duck meat	9,26	+	<7.3
1999	18	*Klebsiella oxytoca* Adria 57	/	9,26	+	8,92
1999	19	*Klebsiella oxytoca* CIP 7932	Medicinal product	8,86	+	8,68
1999	20	*Klebsiella pneumoniae* Adria 28	/	9,2	+	8,76
1999	21	*Klebsiella pneumoniae* CIP 8291	/	8,79	+	8,69

Year of analysis	Strain		Origin	PCA	ISO 4831	PHS 30°C (gas producing colonies)
				(CFU/plate)	BLBVB	(CFU/Petrifilm)
2007	22	*Citrobacter gillenii* Ad343	Food	56-53	+	48-58
2007	23	*Enterobacter intermedius* 60	Beans	25-24	+	30-26
2007	24	*Enterobacter kobei* Ad342	Food	39-32	+	46-30
2007	25	*Citrobacter freundii* 35	Green beans	28-29	+	30-40
2007	26	*Enterbacter agglomerans* 74	Cheese	14-9	+	12-8
2007	27	*Klebsiella oxytoca* 42	Food	37-45	+	34-32
2007	28	*Enterobacter sakazakii* 95	Dairy product	89-105	+	110-100
2007	29	*Escherichia vulneris* 11	Liquid egg	67-75	+	92-98(Gas -)
2007	30	*Escherichia coli* 19	Vegetables	51-57	+	58-58
2007	31	*Escherichia coli* 14	Dairy product	101-81	+	46-104
2007	32	*Erwinia carotovora* CIP82.83T	Sausage	78-82	+	18-août
2007	33	*Enterobacter cloacae* 58	Food	55-52	-	26-20

INCLUSIVITY										
Year of analysis	Strain			Reference	Origin	Dilution	PCA CFU/plate	ISO 4831 (BLBVB) Growth/Gas	PHSCC (30°C)	
									5ml CFU/ Petrifilm	1 ml CFU/ Petrifilm
2018	34	*Escherichia*	*coli*	Ad2001	Chicken meat	-7	123	+	>150	/
						-8	14		78	16
2018	35	*Escherichia*	*coli*	Ad1422	Infant formula	-7	99	+	>150	/
						-8	3		40	8
2018	36	*Escherichia*	*coli*	Ad228	Fish	-7	54	+	>150	/
						-8	7		30	6
2018	37	*Klebsiella*	*pneumonia*	Ad1374	Water	-7	76	+	>150	/
						-8	7		44	9
2018	38	*Klebsiella*	*oxytoca*	Ad1371	Water	-7	17	+	107	21
						-8	3		5	1
2018	39	*Enterobacter*	*hormaechei*	Ad1373	Water	-7	111	+	>150	/
						-8	11		41 (Gas -)	8
2018	40	*Enterobacter*	*kobei*	Ad706	Milk powder	-7	73	+	>150	/
						-8	11		41	8
2018	41	*Cronobacter*	*sakazakii*	Ad2418	Infant formula	-7	70	+	>150	/
						-8	4		41	8
2018	42	*Cronobacter*	*malonaticus*	E752	Baby food	-7	27	+	18(-6)	4(-6)
						-8	3		2(-7)	/
2018	43	*Cronobacter*	*malonaticus*	E684	/	-7	54	+	>150	/
						-8	6		24	5
2018	44	*Citrobacter*	*braakii*	Ad833	Beef meat	-7	84	+	>150	/
						-8	8		58 (gas-)	12
2018	45	*Citrobacter*	*farmeri*	Ad1116	Environ-ment	-7	110	+	>150	/
						-8	12		45 (gas-)	9
2018	46	*Citrobacter*	*freundii*	Ad1326	Egg product	-7	43	+	>150	/
						-8	5		23 (gas-)	5
2018	47	*Citrobacter*	*koseri*	Ad2731	Sprouts	-7	93	-	>150	/
						-8	7		70 (gas-)	14
2018	48	*Citrobacter*	*youngae*	Ad1372	Water	-7	86	+	>150	/
						-8	9		55	11
2018	49	*Escherichia*	*fergusonnii*	Ad1381	Water	-7	30	-	>150	/
						-8	2		31 (gas-)	6
2018	50	*Escherichia*	*vulneris*	127	Raw milk	-7	113	+	>150	/
						-8	11		77 (gas-)	15
2018	51	*Escherichia*	*hermanii*	Ad464	Raw milk	-7	37	-	>150	/
						-8	5		15 (gas-)	3
2018	52	*Hafnia*	*alvei*	Ad2274	Pasteurized cheese	-7	102	-	>150	/
						-8	16		54 (gas-)	11
2018	53	*Hafnia*	*alvei*	Ad1380	Water	-7	63	-	>150	/
						-8	5		51 (gas-)	10
2018	54	*Kluyvera*	*ascorbata*	Ad229	Fish	>>> (-6)	>150(-6)	+/+	>150(-5)	>150(-5)
						46 (-7)	39(-7)		>150(-6) (gas+)	>150(-6)
2018	55	*Leclercia*	*adecarboxtylata*	Ad707	Milk powder	102 (-6)	75(-6)	+/+	>150(-5)	>150(-5)
						11 (-7)	7(-7)		360(-6) (gas+)	72(-6)
2018	56	*Raoultella*	*terrigena*	Ad1370	Water	77 (-7)	56(-7)	+/+	>150(-6)	>150(-6)
						7(-8)	7(-8)		80(-7) (gas+)	16(-7)
2018	57	*Pantoea*	*agglomerans*	A00L065	Cheese	95 (-7)	80(-7)	+/+	>150(-6)	>150(-6)
						6(-8)	7(-8)		143(-7)(gas+)	29(-7)

EXCLUSIVITY						
Year of analysis	Strain		Origin	PCA	ISO 4831	PHS 30°C (gas producing colonies)
				log UFC/ml	BLBVB	log UFC/ml
1999	1	*Aeromonas hydrophila* CIP 5750	/	8,04	-	8,99
1999	2	Bacillus subtilis ATCC 6633	/	7,08	-	<6.3
1999	3	Edwarsiella tarda CIP 7861	/	9,2	+	<7.3
1999	4	Enterococcus faecalis ATCC 29212	/	9,04	-	<6.3
1999	5	Erwinia carotovora CIP 103762	/	7,38	-	<6.3
1999	6	Lactobacillus plantarum CIP A159	/	8,62	-	<6.3
1999	7	Proteus vulgaris Adria 56	Food product	9,2	+	<7.3
1999	8	Pseudomonas fluorescens CIP 5690	/	9,32	-	<6.3
1999	9	Salmonella enteritidis CIP 8297	/	9,49	+	<6.3
1999	10	Shigella flexneri CIP 8248	/	8,67	-	<7.3
1999	11	Staphylococcus aureus CIP 65.8	Clinic	8,91	-	<6.3
1999	12	Yersinia enterocolitica CIP 8027	/	9,08	+	<7.3
1999	13	Hafnia alvei Adria 168	Duck meat	9,2	-	<8.0

Year of analysis	Strain		Origin	PCA	ISO 4831	PHS 30°C (gas producing colonies)
				(CFU/plate)	BLBVB	(CFU/Petrifilm)
2007	14	Aeromonas hydrophila CIP 7430	Fish	50-91	-	150-130
2007	15	Aeromonas hydrophila CIP 5750	/	87-45	-	75-90
2007	16	Citrobacter koseri 71	Frozen vegetables	85-73	-	0*
2007	17	Hafnia alvei A00C067	Poultry	77-88	-	0*
2007	18	Proteus vulgaris 43	Ham	0-3	-	0*
2007	19	Providencia rettgeri 112	Egg white	68-57	-	0*
2007	20	Yersinia enterocolitica AC066	Poultry	28-32	-	0*
2007	21	Citrobacter freundii 23	Sausage	67-65	-	0*
2007	22	Citrobacter freundii 53	Beans	81-98	-	0*
2007	23	Citrobacter diversus 100	Liver	96-117	-	0*
2007	24	Enterobacter amnigenus 126	Ground beef	102-99	-	0*
2007	25	Enterobacter fergusonii 2876	Surface	36-23	-	0*
2007	26	Serratia marcescens Ad447	Raw milk	79-79	-	0*
2007	27	Escherichia hermanii 395	Meat product	44-62	-	0*
2007	28	Escherichia hermanii Ad464	Raw milk	40-19	-	0*
2007	29	Citrobacter koseri CIP 72.8	/	48-68	-	0*
2007	30	Serratia liquefaciens 5	Egg	102-102	-	0*

* Those strains are developing non-gas producing colonies on the Petrifilm plate

Appendix 9 – Flow diagram of the reference method NF ISO 4832 (July 2006) - Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of coliforms - Colony Count Technique

Sample

↓

xg + 9 xg according to ISO 6887 parts

↓

Decimal dilutions in appropriate diluent

↓

1 ml per Petri dish (1 Petri dish per dilution)

↓

Pour 15 ml of VRBL

↓

Solidification

↓

Add a double layer of VRBL

↓

Incubation for 24 h ± 2 h at 30°C ± 1

↓

Count characteristic colonies (red ∅ ≥ 0.5 mm sometimes surrounded with red colorant) (take into account the Petri dishes with a maximum of 150 characteristic colonies and/or non-characteristic colonies).

The non-characteristic colonies are confirmed by proceeding to a subculture in BLBVB incubated for 24 h ± 2h at 30°C ± 1°C.

Appendix 10 - Inter-laboratory: results obtained by the collaborators and the expert laboratory

Lab.	Sample	Reference method: ISO 4832					Alternative method: 3M™ Petrifilm™ HSCC			
		Dilution	Colonies		CFU/g	log CFU/g	Dilution	Colonies	CFU/g	log CFU/g
			a	b						
A	1	1	0	0	<1	<0	0,2	0		<-0,70
		10	0	0			2	0		
	5	1	0	0	<1	<0	0,2	0		<-0,70
		10	0	0			2	0		
	4	1	94	98	95	1,98	2	38	73	1,86
		10	8	10			20	2		
	6	1	111	106	110	2,04	2	41	84	1,92
		10	12	8			20	5		
	2	10	76	77	750	2,88	20	31	620	2,79
		100	5	6			200	3		
	7	10	74	78	760	2,88	20	38	750	2,88
		100	8	8			200	3		
	3	100	83	74	7700	3,89	200	37	7400	3,87
		1000	4	8			2000	*Not tested*	N'	
	8	100	72	73	7000	3,85	200	37	7400	3,87
		1000	4	6			2000	*Not tested*	N'	
B	1	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	5	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	4	1	94	95	95	1,98	2	43	89	1,95
		10	11	8			20	6		
	6	1	77	80	78	1,89	2	62	120	2,08
		10	11	3			20	3		
	2	10	72	74	750	2,88	20	37	820	2,91
		100	8	10			200	8		
	7	10	89	99	950	2,98	20	46	910	2,96
		100	6	14			200	4		
	3	100	90	95	9500	3,98	200	42	7600	3,88
		1000	21	4			2000	0		
	8	100	90	102	9900	4,00	200	47	9300	3,97
		1000	13	12			2000	4		

Lab.	Sample	Reference method: ISO 4832					Alternative method: 3M™ Petrifilm™ HSCC			
		Dilution	Colonies		CFU/g	log CFU/g	Dilution	Colonies	CFU/g	log CFU/g
			a	b						
C	1	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	5	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	4	1	83	72	76	1,88	2	32	64	1,81
		10	7	6			20	3		
	6	1	83	81	83	1,92	2	46	93	1,97
		10	10	8			20	5		
	2	10	93	81	860	2,93	20	36	710	2,85
		100	8	7			200	3		
	7	10	84	72	920	2,96	20	41	750	2,88
		100	12	8			200	0		
	3	100	67	73	7200	3,86	200	39	8000	3,90
		1000	8	10			2000	5		
	8	100	91	95	10000	4,00	200	44	8500	3,93
		1000	5	10			2000	3		
D	1	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	5	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	4	1	78	82	84	1,92	2	36	76	1,88
		10	10	15			20	6		
	6	1	100	107	100	2,00	2	28	58	1,76
		10	8	14			20	4		
	2	10	63	72	710	2,85	20	39	730	2,86
		100	9	11			200	1		
	7	10	94	94	920	2,96	20	48	930	2,97
		100	8	7			200	3		
	3	100	99	93	9600	3,98	200	41	8200	3,91
		1000	7	13			2000	*Not tested*	N'	
	8	100	103	106	10000	4,00	200	53	11000	4,04
		1000	6	14			2000	*Not tested*	N'	

Lab.	Sample	Reference method: ISO 4832					Alternative method: 3M™ Petrifilm™ HSCC			
		Dilution	Colonies		CFU/g	log CFU/g	Dilution	Colonies	CFU/g	log CFU/g
			a	b						
E	1	1 10	0 0	0 0	<1	<0	0,2 2	0 0	<0,2	<-0,70
	5	1 10	0 0	0 0	<1	<0	0,2 2	0 0	<0,2	<-0,70
	4	1 10	100 10	107 11	100	2,00	2 20	43 6	89	1,95
	6	1 10	108 4	114 12	110	2,04	2 20	37 2	71	1,85
	2	10 100	88 9	90 15	920	2,96	20 200	37 6	780	2,89
	7	10 100	86 10	86 10	870	2,94	20 200	45 3	870	2,94
	3	100 1000	89 8	108 11	9800	3,99	200 2000	38 *Not tested*	7600 N'	3,88
	8	100 1000	76 8	99 9	8700	3,94	200 2000	53 *Not tested*	11000 N'	4,04
F	1	1 10	0 0	0 0	<1	<0	0,2 2	0 0	<0,2	<-0,70
	5	1 10	0 0	0 0	<1	<0	0,2 2	0 0	<0,2	<-0,70
	4	1 10	54 8	72 3	62	1,79	2 20	24 3	49	1,69
	6	1 10	68 4	78 1	69	1,84	2 20	28 3	56	1,75
	2	10 100	57 4	52 3	530	2,72	20 200	42 3	820	2,91
	7	10 100	48 4	42 7	460	2,66	20 200	36 2	690	2,84
	3	100 1000	72 12	75 7	7500	3,88	200 2000	31 3	6200	3,79
	8	100 1000	56 3	56 6	5500	3,74	200 2000	31 2	6000	3,78

Lab.	Sample	Reference method: ISO 4832					Alternative method: 3M™ Petrifilm™ HSCC			
		Dilution	Colonies		CFU/g	log CFU/g	Dilution	Colonies	CFU/g	log CFU/g
			a	b						
H	1	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	5	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	4	1	115	110	110	2,04	2	46	95	1,98
		10	11	10			20	6		
	6	1	109	95	100	2,00	2	43	89	1,95
		10	10	15			20	6		
	2	10	72	88	810	2,91	20	62	1300	3,11
		100	5	14			200	7		
	7	10	85	87	860	2,93	20	43	890	2,95
		100	8	10			200	6		
	3	100	123	108	12000	4,08	200	62	12000	4,08
		1000	11	13			2000	4		
	8	100	109	100	10000	4,00	200	41	8700	3,94
		1000	9	7			2000	7		
I	1	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	5	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	4	1	120	118	120	2,08	2	19	40	1,60
		10	15	8			20	3		
	6	1	107	108	110	2,04	2	33	67	1,83
		10	12	13			20	4		
	2	10	66	77	700	2,85	20	33	690	2,84
		100	3	8			200	5		
	7	10	89	58	730	2,86	20	25	560	2,75
		100	7	7			200	6		
	3	100	91	95	9200	3,96	200	47	9300	3,97
		1000	8	8			2000	4		
	8	100	92	101	9900	4,00	200	48	9800	3,99
		1000	13	12			2000	6		

Lab.	Sample	Reference method: ISO 4832					Alternative method: 3M™ Petrifilm™ HSCC			
		Dilution	Colonies		CFU/g	log CFU/g	Dilution	Colonies	CFU/g	log CFU/g
			a	b						
J	1	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	5	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	4	1	75	67	71	1,85	2	83	160	2,20
		10	7	7			20	7		
	6	1	71	67	73	1,86	2	59	120	2,08
		10	12	10			20	5		
	2	10	44	50	490	2,69	20	42	860	2,93
		100	6	7			200	5		
	7	10	56	67	620	2,79	20	40	800	2,90
		100	7	6			200	4		
	3	100	84	73	7800	3,89	200	49	9600	3,98
		1000	7	7			2000	4		
	8	100	81	86	8400	3,92	200	51	10000	4,00
		1000	8	9			2000	4		
K	1	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	5	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	4	1	85	90	85	1,93	2	45	91	1,96
		10	5	7			20	5		
	6	1	97	96	97	1,99	2	39	85	1,93
		10	9	11			20	8		
	2	10	87	87	880	2,94	20	48	960	2,98
		100	9	10			200	5		
	7	10	98	87	910	2,96	20	39	730	2,86
		100	7	8			200	1		
	3	100	86	93	9200	3,96	200	49	9800	3,99
		1000	12	11			2000	*Not tested*	N'	
	8	100	98	107	10000	4,00	200	40	8000	3,90
		1000	9	11			2000	*Not tested*	N'	

Lab.	Sample	Reference method: ISO 4832					Alternative method: 3M™ Petrifilm™ HSCC			
		Dilution	Colonies		CFU/g	log CFU/g	Dilution	Colonies	CFU/g	log CFU/g
			a	b						
L	1	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	5	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	4	1	139	128	130	2,11	2	90	220	2,34
		10	12	10			20	28		
	6	1	95	102	97	1,99	2	70	180	2,26
		10	5	11			20	27		
	2	10	77	70	810	2,91	20	33	600	2,78
		100	10	22			200	0		
	7	10	90	75	830	2,92	20	27	530	2,72
		100	5	13			200	2		
	3	100	80	78	7700	3,89	200	44	8800	3,94
		1000	5	6			2000	*Not tested*	N'	
	8	100	66	79	7800	3,89	200	42	8400	3,92
		1000	11	15			2000	*Not tested*	N'	

Lab.	Sample	Reference method: ISO 4832♦					Alternative method: 3M™ Petrifilm™ HSCC			
		Dilution	Colonies		CFU/g	log CFU/g	Dilution	Colonies	CFU/g	log CFU/g
			a	b						
ADRIA	1	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	5	1	0	0	<1	<0	0,2	0	<0,2	<-0,70
		10	0	0			2	0		
	4	1	134	108	110	2,04	2	42	91	1,96
		10	4	5			20	8		
	6	1	116	49	80	1,90	2	39	75	1,88
		10	3	8			20	2		
	2	10	87	83	850	2,93	20	49	950	2,98
		100	8	8			200	3		
	7	10	49	45	460	2,66	20	31	660	2,82
		100	3	4			200	5		
	3	100	59	71	6000	3,78	200	55	10000	4,00
		1000	2	1			2000	1		
	8	100	33	37	3300	3,52	200	55	11000	4,04
		1000	0	2			2000	6		

♦ Analyses performed according to the COFRAC accreditation

Collaborator	Enumeration of the mesophilic aerobic microflora (cfu/ml)
A	680 000
B	790 000
C	2 100
D	1 200 000
E	41 000
F	6 000
H	980 000
I	990
J	520
K	480 000
L	17 000
ADRIA	750