NF VALIDATION
Validation of alternative analysis methods
Application to water microbiology.

Summary report according to the Validation Protocol for an alternative commercial method compared to a reference method – Revision 2

Quantitative method

COMPASS cc Agar
Certificate # BKR 23/08 - 06/12
For enumeration of *Escherichia coli* and coliforms
Protocol for water for human consumption.

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

For: SOLABIA S.A.S.
29, rue Delizy
93698 PANTIN CEDEX
FRANCE

This report contains 78 pages, including 55 pages of appendix.

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Contents

Appendixes

1. Introduction

1.1. Validation history

The COMPASS cc agar method was validated by AFNOR Certification in June 2012 under the attestation number BKR 23/08 - 06/12 for the enumeration of *Escherichia coli* and coliforms in human drinking water according to the validation protocol of a commercial alternative method compared to a reference method (revision 1 – May 2010).
No changes have been made to the methodology since the initial validation carried out by EUROFINS IPL North in 2012.
A first renewal study was carried out in 2016 by the Scientific Institute of Hygiene and Analysis (ISHA) according to revision 2 of May 2013 of the validation protocol of an alternative commercial method compared to a reference method. During this study, the 3 categories initially validated were grouped into one, which explains the large number of samples used in relative accuracy and the three types of water tested in linearity. A second renewal study was carried out in 2020 without any modification and this draft study concerns the third renewal.

The results reported in this report were produced during the validation tests conducted by EUROFINS IPL Nord within the framework of the NF VALIDATION mark, in accordance with the requirements in force.

1.2. Validation Repository

This summary report of the NF Validation certification is carried out according to version 2 of May 2013 of the validation protocol for a commercial alternative method compared to a reference method.

1.3. Alternative Method

1.3.1. Principle of the method

COMPASS cc Agar is a selective chromogenic medium that allows direct (unconfirmed) and simultaneous enumeration of *Escherichia coli* and total coliforms, after a membrane filtration step.

The principle of the medium is based on the simultaneous detection of two specific enzymatic activities: β-galactosidase (β-gal) and β-D-glucuronidase (GUD) by two chromogenic substrates:

- Bacteria belonging to the coliform group are distinguished by the production of a β-galactosidase (β-gal). This enzyme reacts with the chromogenic mixture to form a pink-colored precipitate.
- All strains of *Escherichia coli* have a β-galactosidase and 94-97% of them also have a β-glucuronidase. The presence of this enzyme is revealed by the presence of a blue-colored compound. The simultaneous action of the two enzymes causes the *Escherichia coli* colonies to appear purple-blue.

A special blend of peptones promotes the growth of coliforms.
The buffer system provides optimal conditions for enzymatic reactions. The selective system makes it possible to inhibit potentially interfering species.

Finally, the result of the analysis makes it possible to distinguish between coliforms (β-gal +/GUD-), pink colonies, and *E. coli* (β-gal+/GUD+), blue-purple colonies due to the superposition of colors.

1.3.2. Protocol of the alternative method

The protocol consists of the following steps:

- Filtration of a given volume of the sample to be tested (100 ml for tap water, 250 ml for bottled water) on a membrane with a nominal porosity of 0.45 µm.
- Membrane deposition on the surface of a COMPASS cc agar.
- Incubation of seeded dishes at 36 ± 2°C for 24 ± 3 hours.
- Reading the plates:
    - pink colonies = Coliforms (β-gal+) other than *E. coli*
    - blue-purple colonies = *E. coli* (β-gal+/GUD+)

The coliform count (without *E. coli*) is obtained by summing the pink colonies. The E. *coli* count is obtained by counting the blue to purple colonies.
Total coliform counts are calculated by summing pink colonies and blue to purple colonies.
In the study, the minimum incubation time of 21 hours was followed.

A diagram of the alternative method is presented in Appendix A.

1.4. Scope

The scope of the alternative method concerns water for human consumption.

1.5. Reference Method

The reference method is that described in the standard NF EN ISO 9308-1:2000 (index T90-414) "Water quality: Detection and enumeration of *Escherichia* coli and coliform bacteria – Part 1: Membrane filtration method".

The reference method protocol is presented in Appendix A.

2. Methods comparison study

The methods comparison study determined the following parameters: linearity, relative accuracy, limit of detection and limit of quantification, inclusivity, exclusivity, and practicability.

The study was conducted on a variety of samples and strains representative of waters. This is not an exhaustive list of the various matrices included in the application scope. For any remark on the alternative method, you can contact AFNOR Certification by connecting to the Internet page ***http://nf-validation.afnor.org/contact-2/***.

2.1. Relative accuracy

Relative accuracy is defined as the closeness of the agreement between the test result and the accepted reference value. Relative accuracy is the level of correspondence between the response obtained with the reference method and the response obtained with the alternative method on the same samples.

2.1.1. Number and nature of samples

A total of 189 water samples were analyzed to obtain at least 20 interpretable results per method and parameter.

The distribution of the samples is as follows:

Table 1: distribution of samples according to the parameter tested and the type of water analyzed

Type	Samples analysed	Samples used	
		E. coli	**Total coliforms**
Mains water and fountain	66	13	15
Bottled water	48	10	11
Well water, spring, borehole	75	14	14
Total category "water for human consumption"	**189**	**37**	**40**

Samples for which results were not interpretable included:

- samples that had uninterpretable counts on the TTC + Tergitol agar of the NF EN ISO 9308-1:2000 standard (index T90-414), due to the presence of a significant interfering flora (5 samples),
- samples with counts greater than 100 CFU/100 mL or 250 mL by either of the 2 methods (11 samples),
- samples that had counts <1 CFU/100 mL by either method,
- samples that presented interpretable results but whose stress could not be validated,
- samples for which a count of less than 3 CFU per test portion was observed for at least one of the replicates of one of the two methods.

During the latest renewal study project in 2024, a number of samples were also excluded from the statistical interpretation in order to meet the requirements of EN ISO 8199:2018. This includes:

- samples with counts greater than 80 CFU/100 mL or 250 mL by either method (5 samples),

2.1.2. Artificial contamination

As part of this validation study, artificial contamination was required in order to obtain all positive water samples, i.e. a percentage of artificial contamination of 100%, regardless of the parameter (details in Appendix B1).

Artificial contamination was carried out, using:

- contaminating suspensions containing *E. coli* or coliforms,
- or naturally contaminated water (contamination by mixing for mains water and spring water).

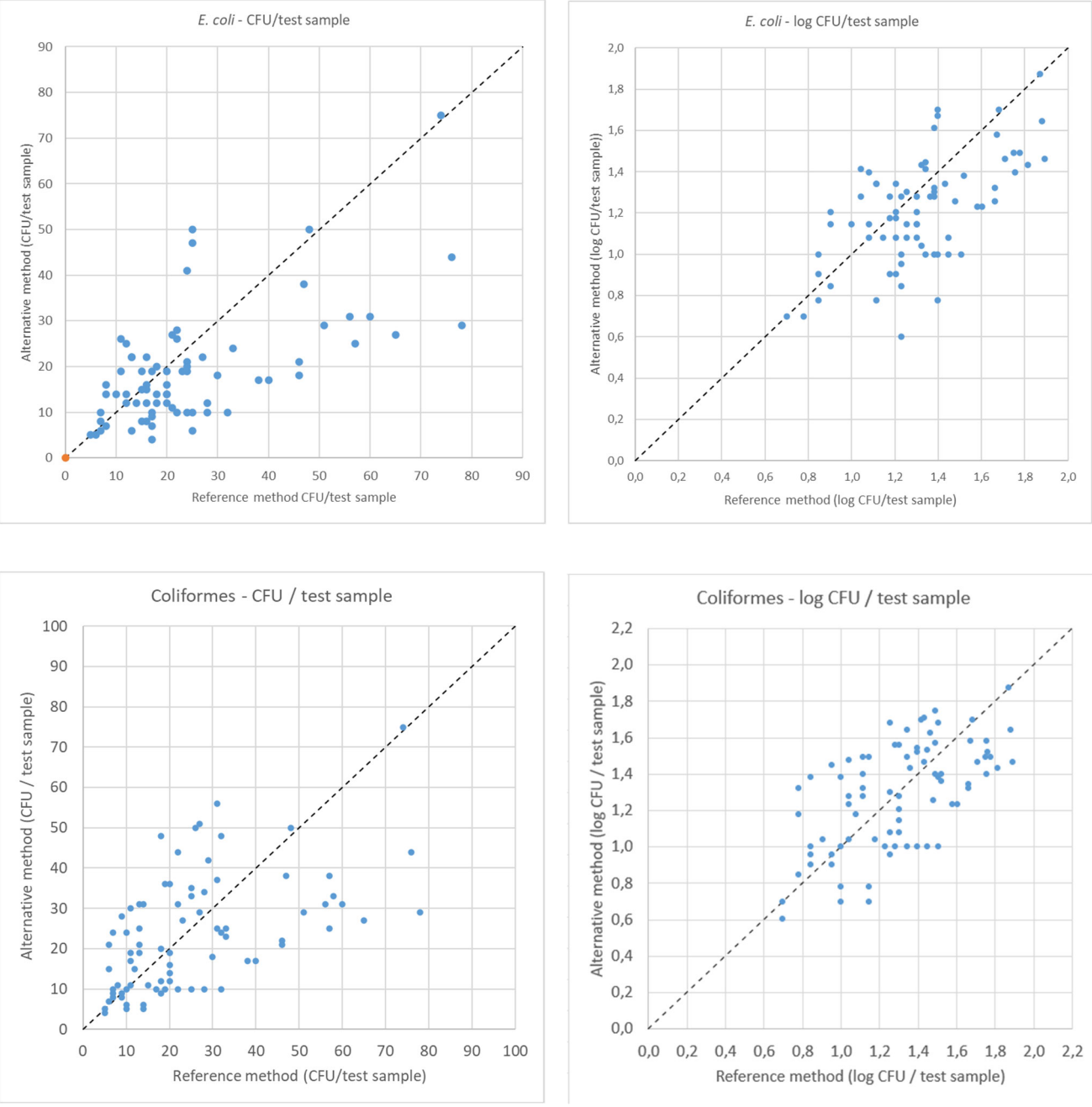
For the preparation of the contaminated suspensions, the strains used have been previously stressed, according to the rules defined in the requirements published by AFNOR Certification.

2.1.3. Raw results

The raw results are reported in Appendix B2 and the statistical calculations in Appendix B3.

Figure 1 shows the two-dimensional graphs for the category being tested for the *E. coli parameter* and the coliform parameter. The y-axis is reserved for the alternative method and the x-axis is reserved for the reference method. The representation of a line with the equation "y=x" is dotted on the graphs.

Figure 1: Two-dimensional graphs for determining the relative accuracy of the Compass cc Agar method for the enumeration of coliform and E. coli in water for human consumption.



2.1.4. Statistical Interpretation

The relative accuracy relationship between the reference method and the alternative method is evaluated with the linear model: "y = a + bx". This formula corresponds to the equation of the linear regression line drawn from the raw results obtained by the experiment, y representing the alternative method and x representing the reference method.
There is an ideal accuracy (or there is no systematic bias) between the two methods if this equation is equal to the theoretical equation "y = x", which applies in the ideal model where the two methods behave in the same way.
The intercept "a" is theoretically zero in this ideal model (assumption [a=0]). The estimated intercept obtained with both methods is verified using p{a=0}. If the alternative method is systematically biased from the reference method, the probability p{a=0} is less than α= 0.05.
The slope "b" is theoretically equal to 1 in the ideal model (assumption [b=1]). The estimated slope obtained with both methods must be verified by p{b=1}. Statistically, if the alternative method does not give the same values as the reference method, the probability p{b=1} is less than α= 0.05.

The choice of the linear regression method is based on the value of the robustness of the R-ratio of the standard deviations of overall repeatability:

- if Rob.R >2, a linear least squares regression (OLS 1) is used with the x-axis for the reference method,
- if Rob.R <0.5, a linear least squares regression (OLS 2) is used with the x-axis for the alternative method,
- If 0.5 < Rob.R <2, an orthogonal regression (GMFR) is used with the x-axis for the reference method.

Rob.R ranges from 0.5 to 2 for both parameters; the regression used is therefore an orthogonal regression (GMFR). The result of the statistical interpretation is given in the following tables.

Table 2: Statistical interpretation of relative accuracy data (CFU/test dose and log CFU/test portion) for the two parameters tested.

Parameter	Data	a	t(a)	p(t; a=0)%	b	t(b)	p(t; b=1)%	Conclusion
E. coli	UFC	1,04	0,405	68,6	0,73	2.879	0,5	a=0} accepted {b=1} rejected
	Log CFU	-0,003	0,008	99,3	0,922	0,647	51,9	{a=0} accepted {b=1} accepted
Coliforms	UFC	3,82	1,394	16,7	0,78	2,385	2,0	a=0} accepted {b=1} rejected
	Log CFU	0,058	0,131	89,6	0,944	0,451	65 ,3	{a=0} accepted {b=1} accepted

The graphs representing the regression lines are presented in Appendix B3 and the equations are shown in the tables below:

Table 3: Summary of the equations of the regression lines for the coliform parameter and for the E. coli parameter

Category	***E. coli***	Coliforms
Water for human consumption	**Alt. = 0.73 Ref. + 1.04** **log (Alt.) = 0.9122 log (Ref.) -0.003**	**Alt. = 0.78 Ref. + 3.82** **log (Alt.) = 0.944 log (Ref.) + 0.058**

Additional statistical parameters were calculated from the relative accuracy results (Tables 4 and 5):

- the standard deviations of repeatability of the alternative method and the reference method,
- the bias between the alternative method and the reference method.

Table 4: bias and repeatability of the two methods for the E. coli parameter

Matrix	Repeatability				Bias (D) (alternative-reference)	
	r		Rob.r		Medium	Median
	Ref.	Alt.	Ref.	Alt.		
Water for human consumption						
CFU/Test sample	15,3	15,5	8,8	11,7	-5,8	-6,5
log CFU/test sample	0,272	0,348	0,207	0,350	**-0,106**	**-0,152**

Table 5: Bias and repeatability of the two methods for the coliform parameter

Matrix	Repeatability				Bias (D) (alternative-reference)	
	r		Rob.r		Medium	Median
	Ref.	Alt.	Ref.	Alt.		
Water for human consumption						
CFU/Test sample	14,7	19,4	11,7	11,7	-1,9	0,3
log CFU/test sample	0,284	0,347	0,279	0,284	**-0,015**	**-0,022**

2.1.5. Conclusion

For both parameters, the hypothesis {a=0 and b=1} is rejected at the risk α=5% when the data are expressed in CFU per test dose. However, this assumption is accepted when the data are expressed in log CFU per test sample.
Repeatability is similar between the reference method and the alternative method.
Median biases are low, higher for *Escherichia coli* (-0.152 log CFU/test dose) than for total coliforms (-0.022 log CFU/test portion).

The relative accuracy of the method is satisfactory.

2.2. Linearity

Linearity is the ability of the method, for a given matrix, to provide results proportional to the amount of analyte present in the sample, i.e. an increase in the analyte corresponds to a linear or proportional increase in the results.

2.2.1. Matrices used and contamination protocol

In initial validation, three types of water were chosen, corresponding to the three categories initially defined. These three datasets were retained when the three categories were grouped together in the 2016 renewal study to meet the requirements of the revised validation protocol.
The waters and strains studied are presented in the following table.

Table 6: Matrix-Strain pairs analyzed

Type of water	Stump	Origin of the strain
Mains water	*E. coli* (ref. EC3e)	Tap water, Bruille St Amand (59)
Bottled water	*E. coli* (ref. EC2e)	Well water, Lille (59)
Unbottled spring water	*Citrobacter youngae* (ref. Cit4e)	Borehole water, Paillencourt

Contamination levels were divided between 5 and 200 microorganisms in 100 or 250 ml depending on the type of water, targeting:

- for level 1: 5 to 10 microorganisms/100 mL or sprouts/250 mL
- for level 2: 20 to 50 microorganisms /100 mL or sprouts/250 mL
- for level 3: 50 to 100 microorganisms /100 mL or sprouts/250 mL

Level 4 (100 to 150 microorganisms /100 mL or microorganisms /250 ml) was removed in this renewal study in order to meet the requirements of EN ISO 8199:2018. A new interpretation has been made.

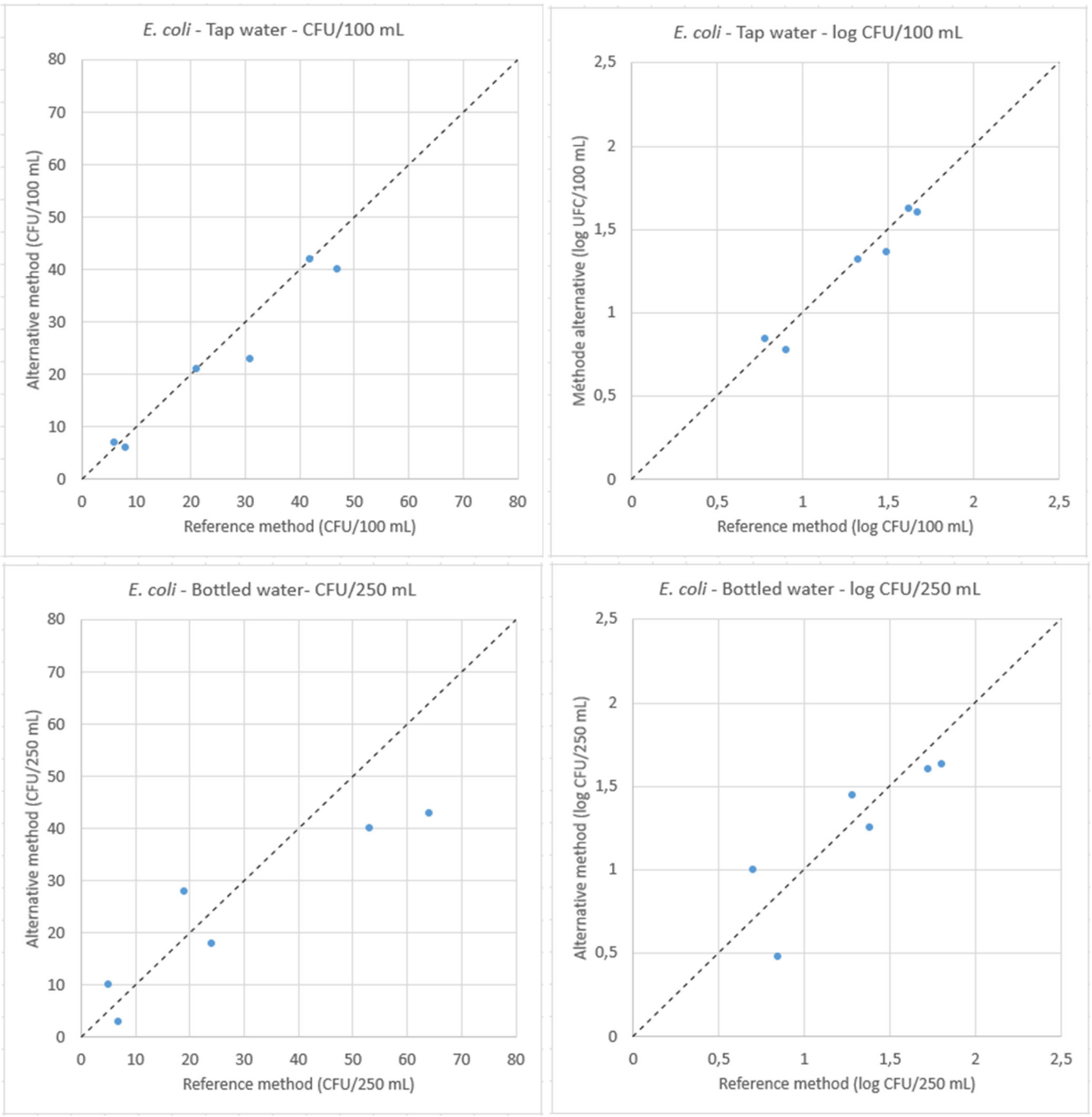
Each sample per level was duplicated, performing two sets of dilutions, and analyzed by the alternative method and by the reference method.
A total of 6 analyses by water type, for a total of 24 analyses, were conducted.

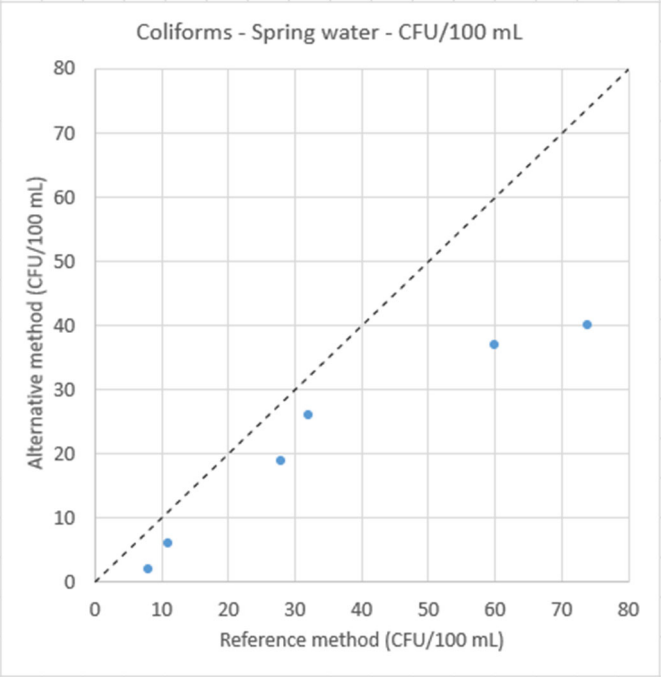
2.2.2. Raw results

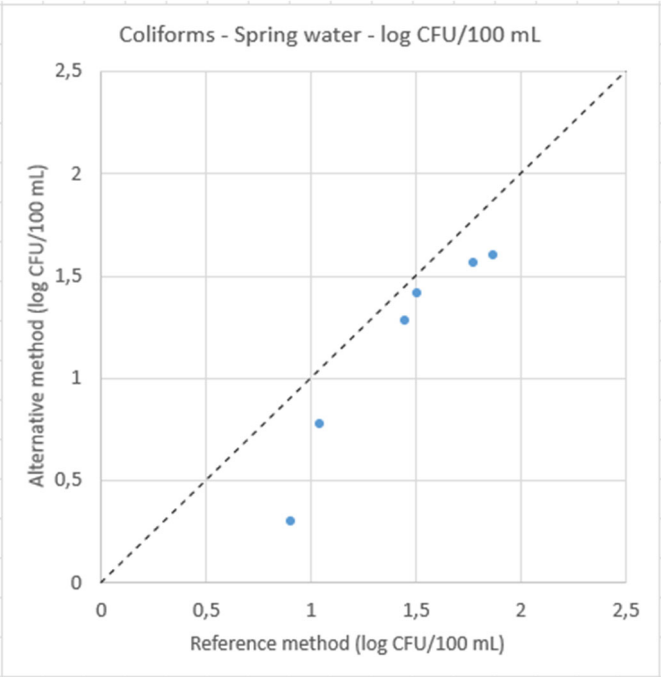
The raw results are shown in Appendix C1.

A two-dimensional graph with the values obtained from the analysis of each sample was plotted for each type of water tested. The vertical (y) axis represents the alternative method, and the horizontal (x) axis represents the reference method.
Counts are expressed in CFU and log CFU per test dose (100 or 250 mL).

Figure 2: Two-dimensional graphs for the linearity determination of the Compass cc Agar method for coliform and E. coliform enumeration E. coli in water for human consumption







2.2.3. Statistical interpretation

Statistical interpretations are carried out in accordance with the requirements of the NF ISO 16140 standard (see Table 5). Details of the calculations are presented in Appendix C2.

The choice of the linear regression method is based on the value of the robustness of the R-ratio of the standard deviations of overall repeatability:

- if Rob.R >2, a linear least squares regression (OLS 1) is used with the x-axis for the reference method,
- if Rob.R <0.5, a linear least squares regression (OLS 2) is used with the x-axis for the alternative method,
- If 0.5 < Rob.R <2, an orthogonal regression (GMFR) is used with the x-axis for the reference method.

Table 7 presents the results of the linearity test performed using the data collected.

Table 7: Statistical interpretation of linearity data (CFU/test portion and log CFU/test portion) for the three matrix-strain pairs tested.

Parameter	Data	Rob. R	Reg.	F crit.	Rob. F	P (Rob.F)	r	Regression line
E. coli – mains water	UFC	0,400	OLS2	6,94	57,0	0,005	0,998	Alt=0.903 Ref-0.156
	log CFU	0,316	OLS2	6,94	37,193	0,009	0,999	log Alt=0.970 log Ref-0.003
E. coli – bottled water	UFC	1,400	GMFR	6,94	0,701	0,464	0,980	Alt=0.661 Ref + 4.711
	log CFU	1,891	GMFR	6,94	-0,446	0,552	0.988	log Alt=0.979 log Ref-0.026
Coliforms – spring water	UFC	1,000	GMFR	6,94	8,460	0 ,062	0,979	Alt=0.592 Ref+0.650
	log CFU	1,496	GMFR	6,94	7,010	0,077	0,980	log Alt=1.330 log Ref-0.737

The relationship between the 2 methods is not linear:

- if Rob.F > F criticizes or if P(Rob.F)< α (=0.05)

2.2.4. Conclusion

The relationship is not linear for *E. coli* – tap water and Coliforms – spring water pairs. However, the correlation coefficient of each pair and the equations of the regression lines are very satisfactory for both CFU/100 ml and log CFU/100 ml.
For the other couple tested, the relationship between the two methods is linear.

The linearity of the alternative method is satisfactory.

2.3. Limits of detection and quantification

The critical level is defined as the smallest quantity that can be detected (non-zero), but not quantified as an exact value.
The detection limit is defined as the level above the critical level.
The limit of quantification is defined as the smallest amount of analyte that can be measured and quantified with defined accuracy and fidelity under the experimental conditions.

2.3.1. Protocol

Four to five levels of inoculation were tested, with six replicates per level. Detailed results are presented in Appendix D and summarized below.
Similar to the linearity study, three types of water were tested in the initial validation study. All results have been retained.

2.3.2. Results

The results obtained for the three water types are presented in Table 8.

Table 8: number of positive samples by water type and level, standard deviations and medians (the reference level, for which at least 50% positive values are obtained, is underlined)

Water Type	Level (cells /100 ml)	Number of positive samples	Standard deviations s_0	Bias x_0 (median of x_{0i})
Mains water	0 CFU/100 mL	0/6	/	/
	0.52 CFU/100 mL	2/6	0,52	0
	1.05 CFU/100 mL	4/6	0,75	1
	1.83 CFU/100 mL	6/6	1,33	3
Spring water	0 CFU/100 mL	0/6	/	/
	0.74 CFU/100 mL	2/6	0,52	0
	1.48 CFU/100 mL	3/6	0,55	0,5
	3.11 CFU/100 mL	4/6	1,72	2
	4.50 CFU/100 mL	6/6	0,75	2
Bottled water	0 CFU/250 mL	0/6	/	/
	0.72 CFU/250 mL	2/6	0,52	0
	1.44 CFU/250 mL	3/6	1,51	1
	3.95 CFU/250 mL	6/6	1,63	3

From the s_0 and x_0 values obtained for the first level, the critical limit (CL), limit of detection (LOD) and limit of quantification (LOQ) were determined for a 100 mL or 250 mL sample (Table 9).

Table 9: LC, LOD and LOQ values for the three water types tested.

Water Type	Germ tested	Parameter	Formula	Value obtained
Mains water	*E. coli*	LC	1.65 $s_0 + x_0$	2.24 CFU/100 mL
		LOD	3.3 $s_0 + x_0$	3.48 CFU/100 mL
		LOQ	10 $s_0 + x_0$	8.53 CFU/100 mL
Spring water	*E. coli*	LC	1.65 $s_0 + x_0$	1.40 CFU/100 mL
		LOD	3.3 $s_0 + x_0$	2.31 CFU/100 mL
		LOQ	10 $s_0 + x_0$	5.98 CFU/100 mL
Bottled water	Coliform	LC	1.65 $s_0 + x_0$	3.48 CFU/250 mL
		LOD	3.3 $s_0 + x_0$	5.97 CFU/250 mL
		LOQ	10 $s_0 + x_0$	16.06 CFU/250 mL

2.3.3. Conclusion

The detection and quantification limits are of the same order of magnitude for untreated water (spring water and bottled water) in proportion to the test intake: 2.3 and 6.0 CFU/100 mL for spring water and 6.0 and 16.1 CFU/250 mL for bottled water, respectively.

They are higher in the presence of treated water (mains water): the detection limit is around 3.5 CFU/100ml and the limit of quantification is around 8.5 CFU/100 ml.

2.4. Selectivity / Specificity

Specificity is defined as the ability of the method to accurately measure a given analyte, or its quantity in the sample without interference with non-target components.
Selectivity is defined as the ability of the method to measure the analyte of interest exclusively.

2.4.1. Protocol

The inclusivity and exclusivity of the method were defined by the analysis, respectively:

- 21 strains of*E. coli* and 24 strains of coliforms other than *E. coli* (target germs)
- and 32 strains of interfering germs (non-target strains).

Protocol for inclusivity:
Each strain of *E. coli* or coliforms was cultured in TCS broth (20 h at 37°C) and then diluted with tryptone-salt to obtain between 10 and 100 cells in 100 mL before using the COMPASS® cc Agar method.

Protocol for exclusivity:
The different strains studied were cultured and diluted in TCS broth (20 h at 37°C), in order to obtain between 10^3-10^5 bacteria in 100 ml before the analysis was carried out according to the COMPASS cc Agar method.

During this study, the strains were tested in single, and in case of discordant results compared to that expected, a new test was carried out with, in parallel, the reference method and the COMPASS cc Agar method.

2.4.2. Results

Detailed results are presented in Appendix E.
The 21 *E. coli* strains tested were detected by the COMPASS® cc Agar method with the exception of one spring water strain (EC20e, Bruille St-Amand) which produced pink colonies that were not characteristic of E. coli (β -gal+/GUD-), but characteristic of coliforms. On TTC+tergitol of the NF EN ISO 9308-1:2000 standard (index T90-141), the colonies were characteristic (lactose +). On the other hand, another strain of spring water (EC14e, Bruille St-Amand) that is not characteristic on TTC+Tergitol of the NF EN ISO 9308-1:2000 standard (index T90-414) appears characteristic on COMPASS® cc Agar.

Note: A strain *of E.* coli (EC11e, Lac de Waziers) produced purple colonies on COMPASS® cc Agar only under the membrane, which is characteristic of *E. coli* (β-gal+/GUD+).

Of the 24 strains of *non-E. coli coliforms*, two foodborne strains of *Hafnia alvei* were not detected. These strains yielded uncharacteristic white colonies (β-gal+/GUD-) on COMPASS® cc Agar. On TTC+Tergitol agar of the NF EN ISO 9308-1:2000 standard (index T90-414), non-characteristic colonies were also observed.

Among the 32 non-target strains tested, 3 strains were detected by the COMPASS® cc Agar method:

- a foodborne strain *of Erwinia* spp: characteristic pink colonies (β-gal+/GUD-) on COMPASS® cc Agar and non-characteristic colonies on TTC+Tergitol of the NF EN ISO 9308-1:2000 standard (index T90-414).
- a strain of *Salmonella enterica subsp*. d*iarizonae*, from sewage treatment plant sludge: characteristic purple colonies (β-gal+/GUD+) on COMPASS® cc Agar, and not characteristic on TTC+Tergitol of the NF EN ISO 9308-1:2000 standard (index T90-414).
- a strain of *Shigella sonnei* of foodborne origin: characteristic pink colonies (β-gal+/GUD-) on COMPASS® cc Agar, and not characteristic on TTC+Tergitol of the NF EN ISO 9308-1:2000 standard (index T90-414).

The remaining 29 strains did not show a characteristic appearance on COMPASS® cc Agar medium: either they did not grow (14 strains) or they produced uncharacteristic colonies (15 strains).

2.4.3. Conclusion

The results of inclusiveness are satisfactory.
Exclusive cross-reactions were observed with one Salmonella strain with β-galactosidase and β-glucuronidase (β-gal+/GUD+) activities, and 2 strains (*Shigella sonnei, Erwinia spp*.) with β-galactosidase (β-gal+/GUD-) activity.

2.5. Practicability

The practicability of the alternative method was assessed by filling in the criteria defined in the AFNOR Certification rules.

1. Method of packaging the elements of the method (see leaflet) 2. Reagent Volume (see leaflet and packaging of the vials)	Ready-to-use pre-cast medium: COMPASS® cc Agar plates are packaged in boxes of 20 boxes of Ø 55 mm.
3. Condition of storage of the elements (see leaflet) – Expiry of unopened products (see leaflet)	Pre-cast cans should be stored between +2°C and +8°C away from light. The expiry date and batch number are indicated on the label.
4. Terms of use after first use (see leaflet)	After opening the package, the agar plates can be stored at 2-8°C away from light and used until the expiry date.
5. Specific equipment or premises required (see leaflet)	Normal configuration and common equipment of a water microbiology laboratory.
6. Reagents ready to use or to be reconstituted (see leaflet)	/
7. Duration of training of the operator uninitiated in the method	Less than 1 day for an operator trained in classic water microbiology techniques.

8. Real-time hands-on – Flexibility of the method in relation to the number of samples to be analyzed

Steps	Average time for a sample (min)		Average time for 30 samples (min)	
	Reference	**Alternative**	**Reference**	**Alternative**
Preparation, sampling	1,0	1,0	20	20
Filtration	1,0	1,0	30	30
Sowing	0,5	0,5	10	10
Readings & Confirmation	1,0	0,5	25	13
Interpretation, and calculations	1,0	0,5	30	12
Total per sample	**4,5**	**3,5**	**3,8**	**2,8**

These times correspond to both negative and positive samples by the alternative method. The advantage of the alternative method lies in the absence of confirmation (chromogenic selective medium).
In addition, handling times are reduced compared to the reference method, which requires confirmation of all the typical colonies obtained (presumption of coliforms and *E. coli*) or a representative number (at least 10) from the TTC+Tergitol agar of the NF EN ISO 9308-1:2000 standard (index T90-414).

9. Timeliness of results

Step	Lead time achieved (days) COMPASS cc Agar	Lead time achieved (days) NF EN ISO 9308-1:2000 (index T90-414)
Sample Preparation	D0	D0
Filtration	D0	D0
Seeding of media	D0	D0
Reading, Interpreting and Calculating	D1	D1 and D2
Negative results (if no typical colony)	**D1**	**Day 2**
Oxidase Test	/	D2 to D3
Indole Testing	/	D2 to D3
Obtaining negative results (after negative confirmation if necessary)	**D1**	**D2 to D3**
Achieving Positive Results (confirmation of characteristic colonies)	**D1**	**D2 to D3**

10. Type of Operator Qualification	Staff trained in microbiology Same level as required for the reference method
11. Common Steps with the Reference Method	/
12. Traceability of test results	/
13. Laboratory Maintenance	/

3. Interlaboratory study

3.1. Implementation

- Number of participating laboratories

15 laboratories were recipients of the samples.

- Matrix used

The interlaboratory study is performed with samples of unbottled spring water (untreated water). The level of flora associated with the matrix (germs revivable at 22°C and 36°C) was determined.

- Strain used

The strain used for the contamination was a strain of *E. coli.*

- Number of samples per laboratory

For each laboratory, the organizing laboratory prepared 8 vials, representing 2 aliquots for each level (each aliquot being analyzed with both methods).
Each sample of each level (2 x 200 mL samples) was packaged in a sterile vial.
All packages sent to participating laboratories contained a temperature probe.

3.2. Sample preparation and contamination procedures

All samples were prepared by the expert laboratory, at a rate of 200 ml per vial, before being individually contaminated.

- **Preparation of contaminated suspensions**

Preparation of the suspension was carried out according to the inoculation protocol for low levels, from an 18-hour culture in TCS broth.

- **Sample contamination protocol**

Samples were contaminated with the prepared contaminant suspension, in order to achieve the desired contamination rates.

Four levels of contamination have been targeted:

- Level 0: 0 CFU/100 mL
- Level 1: 5 to 10 CFU/100 mL
- Level 2: 30 CFU/100 mL
- Level 3: 100 to 150 CFU/100 mL

3.3. Elements necessary for the performance of the tests by the collaborating laboratories

- Reagents used

All the reagents required for the implementation of the alternative method and the reference method have been provided by the manufacturer.

- Instructions

The instructions were sent to the participating laboratories prior to the study and had to be validated by them before the start of the interlaboratory study.

- Conditions for carrying out the analyses.

- All samples are received the day after shipment by 2 p.m.
- The temperature measured upon receipt must be between 0°C and 10°C.

The analyses were carried out by the participating laboratories and the expert laboratory according to the COMPASS cc method and the reference method NF EN ISO 9308-1:2000 (index T90-414): "Water quality: Detection and enumeration of *Escherichia* coli and coliform bacteria – Part 1: Membrane filtration method". No confirmation is required for the alternative method since it is a non-confirmation method.

All media and reagents were retained by the laboratories for further investigation if necessary.

3.4. Control of experimental parameters

3.4.1. Contamination levels and sample stability

- **Pre-seeding**

The "spring water" matrix was analyzed according to the NF EN ISO 9308-1:2000 (index T90-414) and NF EN ISO 6222 methods. None of the test samples tested contained *E. coli.*
The natural flora present in the matrix was 450 CFU/ml after an incubation period of 68±4 h at 22±2°C and 26 CFU/ml for an incubation period of 44±4 h at 36±2°C.

- **Contamination levels obtained**

The contamination levels obtained in the matrix are shown in Table 10 below:

Table 10: Theoretical and actual contamination levels of interlaboratory study samples

Level	Target level (CFU/100 mL)	Inoculated level (CFU/100 mL)
Level 0	0	0
Low Level	5 to 10	8
Intermediate Level	30	24
High Level	100	81

3.4.2. Sample Stability

The level of *E. coli* contamination was monitored for 48 hours after the samples were sent, on samples contaminated at different levels and stored at 4°C.
The results obtained on TTC+Tergitol agar according to NF EN ISO 9308-1:2000 (index T90-414) and COMPASS cc Agar, in CFU/100 ml, over time are shown in Table 11.

Table 11: stability of the E. coli strain

Level	D1		Day 2	
	TTC + Tergitol	COMPASS cc	TTC + Tergitol	COMPASS cc
Low Level (L1)	6	12	9	14
Intermediate Level (L2)	21	26	26	27
High Level (L3)	89	93	87	84

According to the results, the level of contamination varies little over time. The strain is therefore stable in the matrix for 48 h after the samples are sent.

3.5. Temperature at reception and reception times

3.5.1. Analysis of temperature monitoring curves during transport

The temperature curves obtained from the use of the temperature probe data confirm that the temperatures remained stable during transport and below 8°C (between 0.5°C and 2.0°C) until the samples were received in the various laboratories.

3.5.2. Reception temperatures and reception times

The temperatures indicated by the laboratories and recorded by the temperature sensors are shown in the table below.

Table 12: Temperature readings of water bottles containing temperature probes

Laboratory	Temperatures in °C		Comments
	Communicated by the laboratory (upon receipt)	Indicated by the probe (average during transport)	
Has	4,8	1,5	/
B	3,8	1,4	/
C	3,6	1,0	/
D	3,0	1,5	/
E	3,2	1,4	/
F	8,0	1,4	/
G	2,3	1,0	/
H	3,3	0,5	/
I	3,2	2,0	/
J	5,7	1,4	/
K	6,0	1,5	/
L	3,0	1,5	Reception and analysis on D2
M	4,2	1,0	/
N	6,2	1,9	/
O	1,5	0,5	/

14 out of 15 receiving laboratories received the samples the day after they were sent.
11 laboratories received samples by 12:00 p.m., and 3 laboratories (Laboratories A, O and N) received them by 2:00 p.m.
Laboratory L received his samples on D2 in the morning (10:30 a.m.), the analyses were carried out.

Temperature conditions during transport and upon receipt were in accordance with the requirements for all laboratories.

3.5.3. Conclusion

As a result of the sending of the samples to the 15 laboratories, taking into account the conditions of transport and reception of the samples, the results can be used for all laboratories.

3.6. Test results

3.6.1. Enumeration of culturable microorganisms

A water sample was provided to all the laboratories in order to count the revivable germs present at 22 ± 2°C and 36 ± 2°C, according to the NF EN ISO 6222 method.
The results of each of the laboratories are listed in the results tables in Appendix F1.

Counts ranged from 44 to 243 CFU/mL for flora enumerated at 22°C and from 1 to 54 CFU/mL for flora enumerated at 36°C.

3.6.2. Results obtained by the expert laboratory

Table 13 shows the results obtained by the expert laboratory for each contamination rate. The raw results are shown in Appendix F2.

Table 13: results obtained by the expert laboratory for each contamination level

Level	Reference method NF EN ISO 9308-1:2000 (index T9-414)		COMPASS cc Alternative Method	
	Duplicate 1	Duplicate 2	Duplicate 1	Duplicate 2
Level 0	<1	<1	<1	<1
Level 1	8	4	11	13
Level 2	16	26	25	27
Level 3	82	96	100	87

The results obtained by the NF EN ISO 9308-1:2000 method (index T90-414) and by the COMPASS cc Agar method are consistent.

3.6.3. Results obtained by collaborating laboratories

Detailed results for the 15 laboratories are given in Appendix F2.

The results of *the Escherichia coli* counts are shown in Table 14 for level 0, low, intermediate and high levels of contamination. The interlaboratory study having been carried out in 2012, the counts >80 CFU carried out according to the old reference standard of the NF EN ISO 8199 standard are kept.

Table 14: results from participating laboratories for E. coli counts coli in CFU/100 mL (MR: reference method, MOA: alternative method, R: replicate, orange box: impossible or inconsistent count, blue box: count <3 CFU per dish, considered a presence)

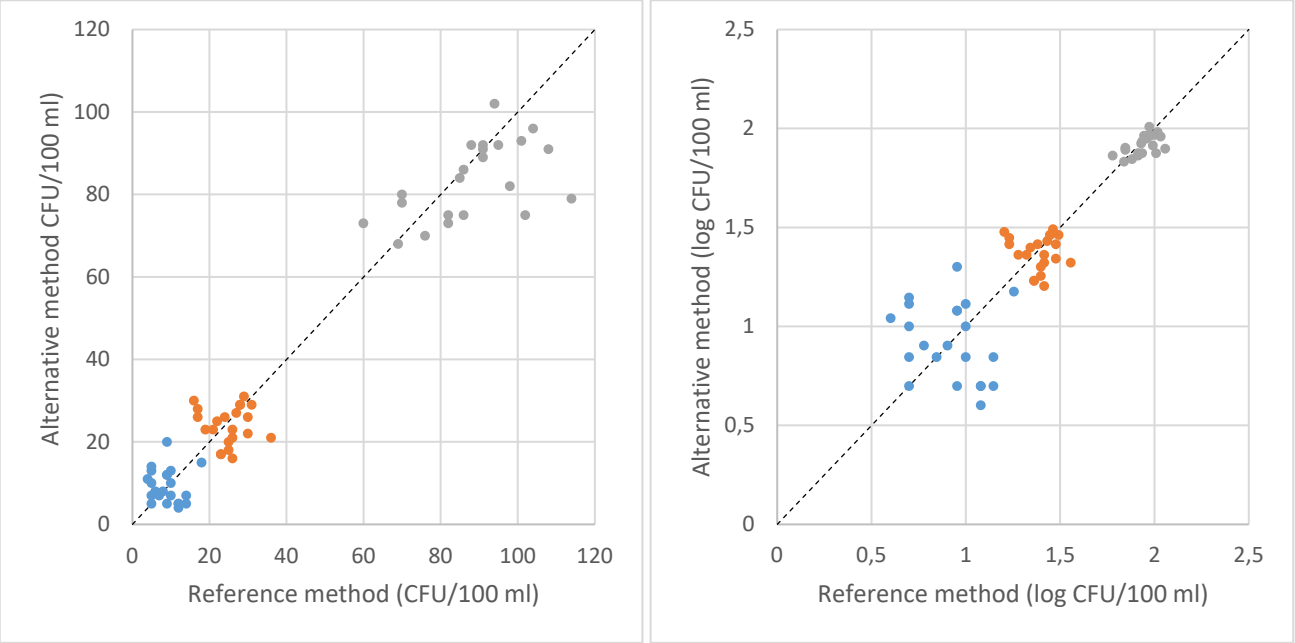
Laboratory	Level 0				Level 1				Level 2				Level 3			
	RM		AM		RM		AM		RM		AM		RM		AM	
	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2
Has	<1	<1	<1	<1	14	6	7	8	25	26	20	23	104	70	96	78
B	<1	<1	<1	<1	<1	1	8	7	26	13	29	22	20	42	69	58
C	<1	<1	<1	<1	10	5	10	7	26	30	21	26	108	70	91	80
D	<1	<1	1	<1	8	9	8	12	21	17	23	28	60	82	73	75
E	1	<1	<1	<1	11	8	6	2	33	26	36	25	88	96	92	80
F	<1	<1	<1	<1	12	12	5	5	24	28	26	29	88	91	92	89
G	<1	<1	<1	<1	7	18	7	15	27	31	27	29	114	95	79	92
H	<1	<1	<1	<1	8	9	9	2	32	32	36	24	90	94	110	109
I	<1	<1	<1	<1	10	5	13	14	29	19	31	23	98	86	82	86
J	<1	<1	<1	<1	12	10	4	7	36	26	21	16	94	101	102	93
K	<1	<1	<1	<1	14	9	5	20	16	30	30	22	86	82	75	73
L	<1	<1	<1	<1	5	4	10	11	25	17	18	26	76	69	70	68
M	<1	<1	<1	<1	7	14	8	8	25	37	23	25	85	95	>100	60
N	<1	<1	<1	<1	5	5	13	5	23	22	17	25	91	91	91	92
O	<1	<1	<1	<1	9	9	12	5	23	28	17	29	102	85	75	84

In general, E. *E. coli* and total coliforms reported by laboratories are of the same order of magnitude.

Concerning the 0 rate, two laboratories (D and E) found one of the 2 positive replicates, with a colony, one for the reference method and the other for the alternative method. The hypothesis of cross-contamination can be retained.
At the low contamination rate, Laboratory B finds a very low result for one of the 2 replicates, and the other replicate is negative.
In addition, two laboratories (E and H) reported count results of less than 3 for one of the 2 replicates with the alternative COMPASS cc agar method.
For laboratory M at level 3, one of the 2 replicates of the alternative method is found greater than 100 CFU/100 ml. In the previous renewal study carried out in 2016, the results of the 15 laboratories were used. For greater consistency in statistical interpretation, in accordance with the requirements of the NF EN ISO 8199:2018 standard, only data from 11 laboratories are retained (Appendix F3). The results of laboratories B, E, H and M are therefore not taken into account in the statistical calculation at the time of this renewal.

The data obtained by these collaborating laboratories are presented as a two-dimensional graph in CFU and log CFU/100 mL for the enumeration of *Escherichia coli* in Figure 3 for a better appreciation of the data (a curve of equation y=x is shown in dotted lines).

Figure 3: Two-dimensional graphs of interlaboratory study results in CFU/100 mL and log CFU/100 mL (blue: Level 1, Orange: Level 2, Grey: Level 3, dashed line: y=x)



3.6.4. Conclusion

The counts reported by the laboratories are of the same order as those obtained by the expert laboratory for each of the contamination levels.

3.7. Statistical interpretation

The results of the interlaboratory study were used according to the validation protocol of an alternative commercial method compared to a reference method (revision 2, adopted by AFNOR Certification on May 2013).

3.7.1. Calculation of bias

Table 15 presents the target value, mean and bias for each contamination level in CFU/100 mL and log CFU/100 mL.

Table 15 : Alternative method bias values

Values	CFU / 100 mL			log CFU/100 mL		
Levels	**1**	**2**	**3**	**1**	**2**	**3**
Target Value	9,000	25,500	89,500	0,954	1,406	1,952
Average	9,227	23,955	83,455	0,924	1,371	1,919
Relative bias	0,025	-0,061	-0,068	-3,14%	-2,49%	-1,69%
Bias	1,025	0,939	0,932	-0,030	-0,035	-0,033

The bias calculated for each level allows us to estimate the reliability of the method: it varies from -0.035 to -0.033 log CFU/100 ml.

3.7.2. Accuracy Profile

Table 16 shows the tolerance values and tolerance limits of the alternative method for different values of tolerance probability and acceptability limits.

Data are presented in CFU/100 mL and log CFU/100 mL.

The low and high tolerance limits per level were calculated by setting tolerance probabilities of 80% and 90%.

Table 16: Level values of high and low tolerance limits for 80% and 90% probability of tolerance, expressed in CFU/100 mL and log CFU/100 mL

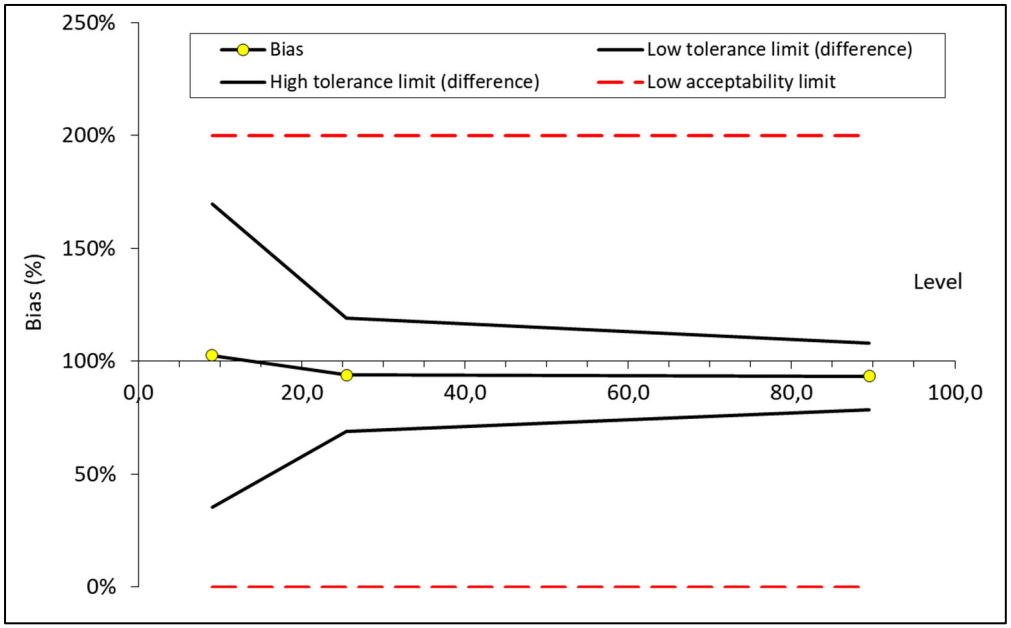
Probability of tolerance	Levels	CFU/100 mL			log CFU/100 mL		
		Low	**Medium**	**High**	**Low**	**Medium**	**High**
80%	Low Tolerance Limit (Difference)	35%	69%	78%	-0,305	-0,157	-0,103
	High Tolerance Limit (Difference)	170%	119%	108%	0,245	0,087	0,037
	Low Acceptability Limit	0%	0%	0%	-0,5	-0,5	-0,5
	High Acceptability Limit	200%	200%	200%	0,5	0,5	0,5
90%	Low Tolerance Limit (Difference)	15%	61%	74%	-0,388	-0,194	-0,124
	High Tolerance Limit (Difference)	190%	127%	113%	0,328	0,124	0,058
	Low Acceptability Limit	0%	0%	0%	-0,5	-0,5	-0,5
	High Acceptability Limit	200%	200%	200%	0,5	0,5	0,5

Figures 4 and 5 show the corresponding accuracy profiles.

For all levels of contamination, the tolerance interval is within the acceptability interval:

- For a tolerance probability of 80% and an acceptability limit of 100% or 0.5 log,
- For a 90% tolerance probability and an acceptability limit of 100% or 0.5 log.

Figure 4 : accuracy profile for a tolerance probability of 80% and acceptability limits of 100% (CFU/100 ml) and 0.5 (log CFU/100 ml)



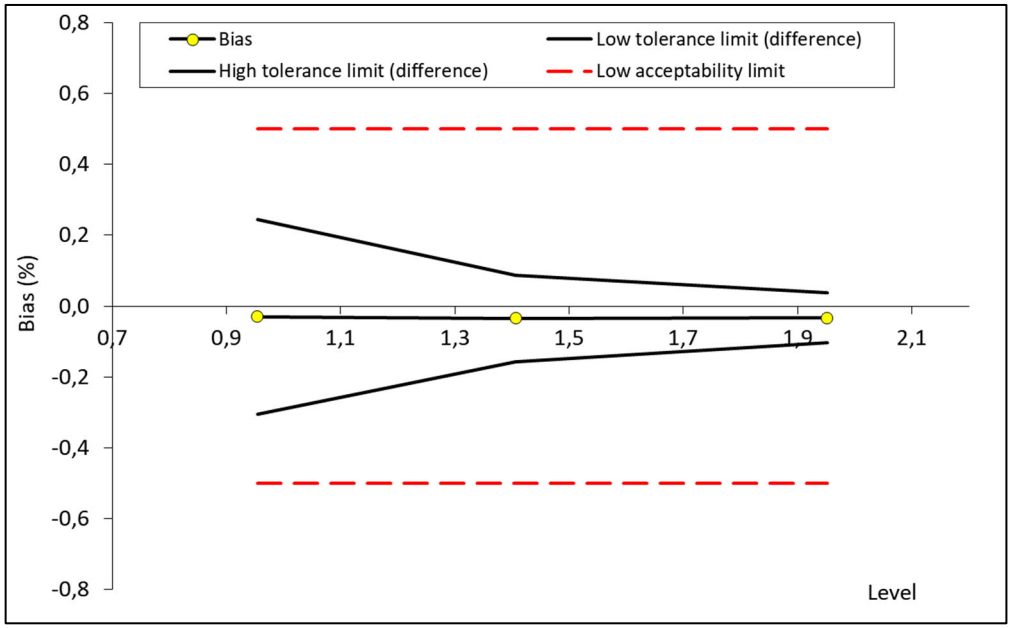
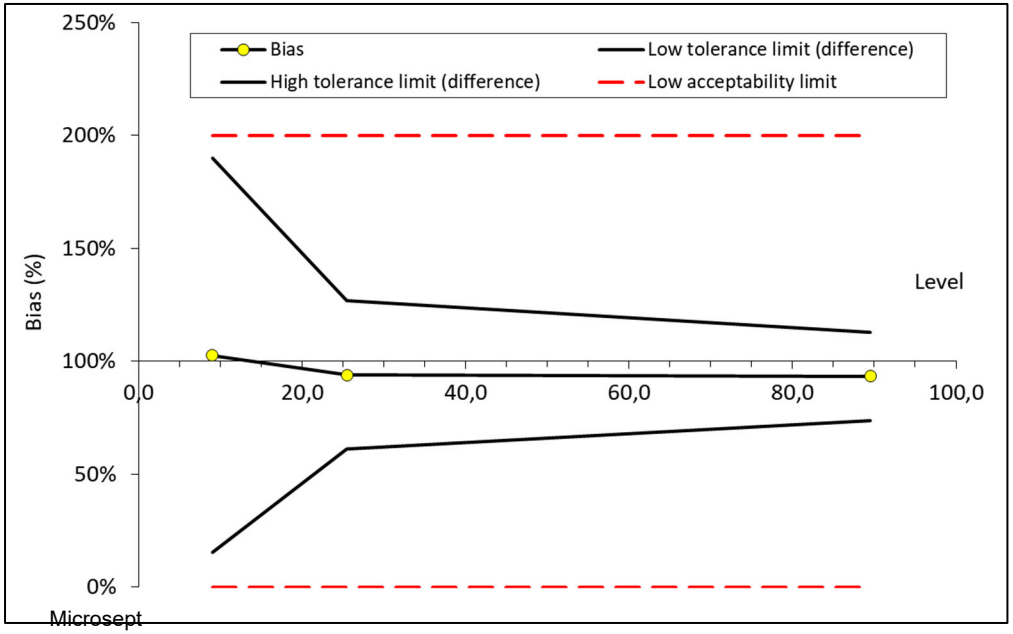
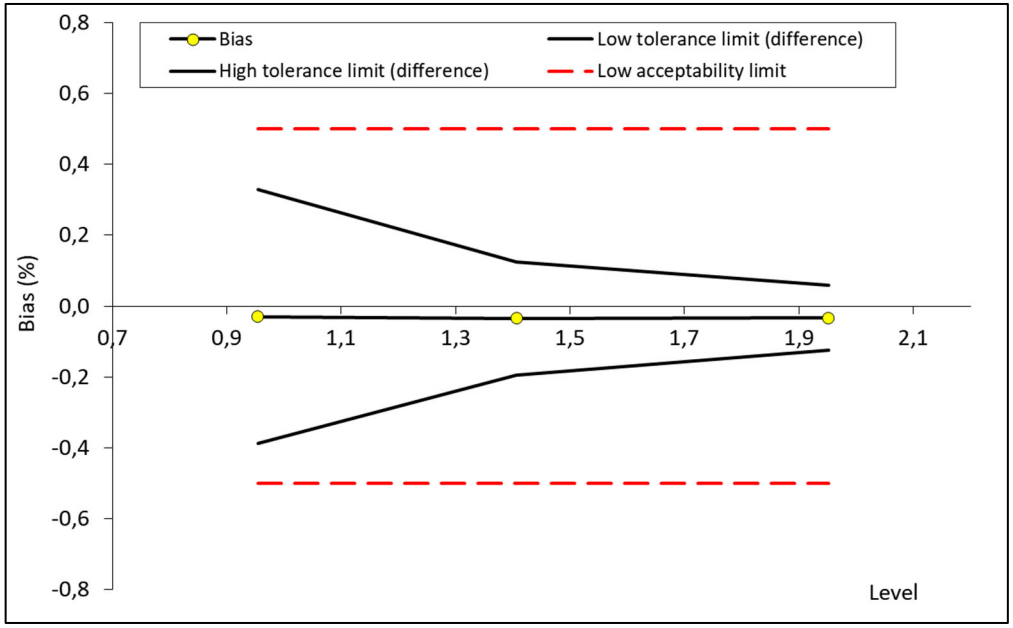


Figure 5 : accuracy profile for a tolerance probability of 90% and acceptability limits of 100% (CFU/100 ml) and 0.5 (log CFU/100 ml)





4. Conclusion

The performance of the COMPASS cc Agar method was compared with that of the reference method NF EN ISO 9308-1:2000 (index T90-414) by the analysis of water samples in the category "Water for human consumption".

The results of the comparative study allow us to conclude that, regardless of the parameter tested (coliforms or *E. coli*):

The selectivity of the method is generally satisfactory.
All 21 *E. coli* strains tested, and 24 coliform strains were detected, with the exception of one environmentally borne *E. coli* strain and two foodborne *Hafnia alvei* strains.
Exclusively, out of 32 strains tested, three cross-reactions were observed with a strain of *Salmonella diarizonae* (also detected by the reference method), a strain of *Shigella sonnei* and a strain of *Erwinia* spp.

The linearity of the alternative method is generally satisfactory.

The relative accuracy of the alternative method compared to the reference method is characterized by bias values ranging from -0.152 to -0.022 log CFU/test portion.

The values of the standard deviations of repeatability calculated are of the same order for both methods: they vary according to the type of water, from 0.284 to 0.350 log CFU/test portion, regardless of the parameter.

The limits of detection and quantification were estimated to be 2.3 and 6.1 CFU/100 mL for raw water and 3.5 and 8.5 CFU/100 mL for treated water, respectively.

The results of the interlaboratory study conclude that:

The biases observed between the COMPASS cc Agar method and the reference method are low: they vary from -0.03 to -0.04 log CFU/100 ml depending on the contamination levels.

The accuracy profiles obtained at the end of the collaborative study are satisfactory with a β tolerance value set at 80% or 90% and an acceptability limit of ± 0.5 log (CFU/100 ml).

Done at the Lion d'Angers, February 23, 2024

Guillaume MESNARD
Deputy technical manager

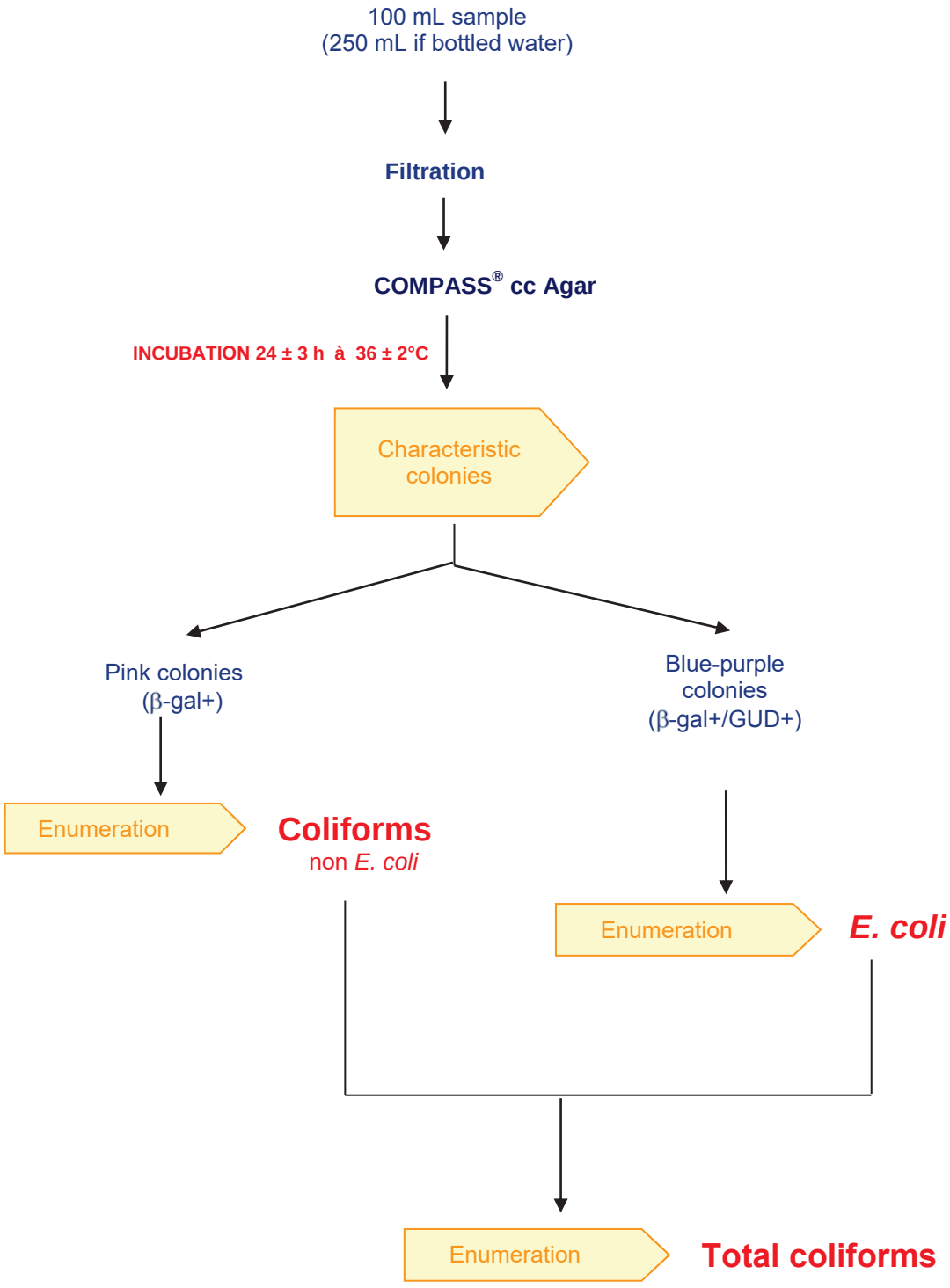
François LE NESTOUR
Head of the Microbiology Department

Appendix A

PROTOCOLS

Alternative method

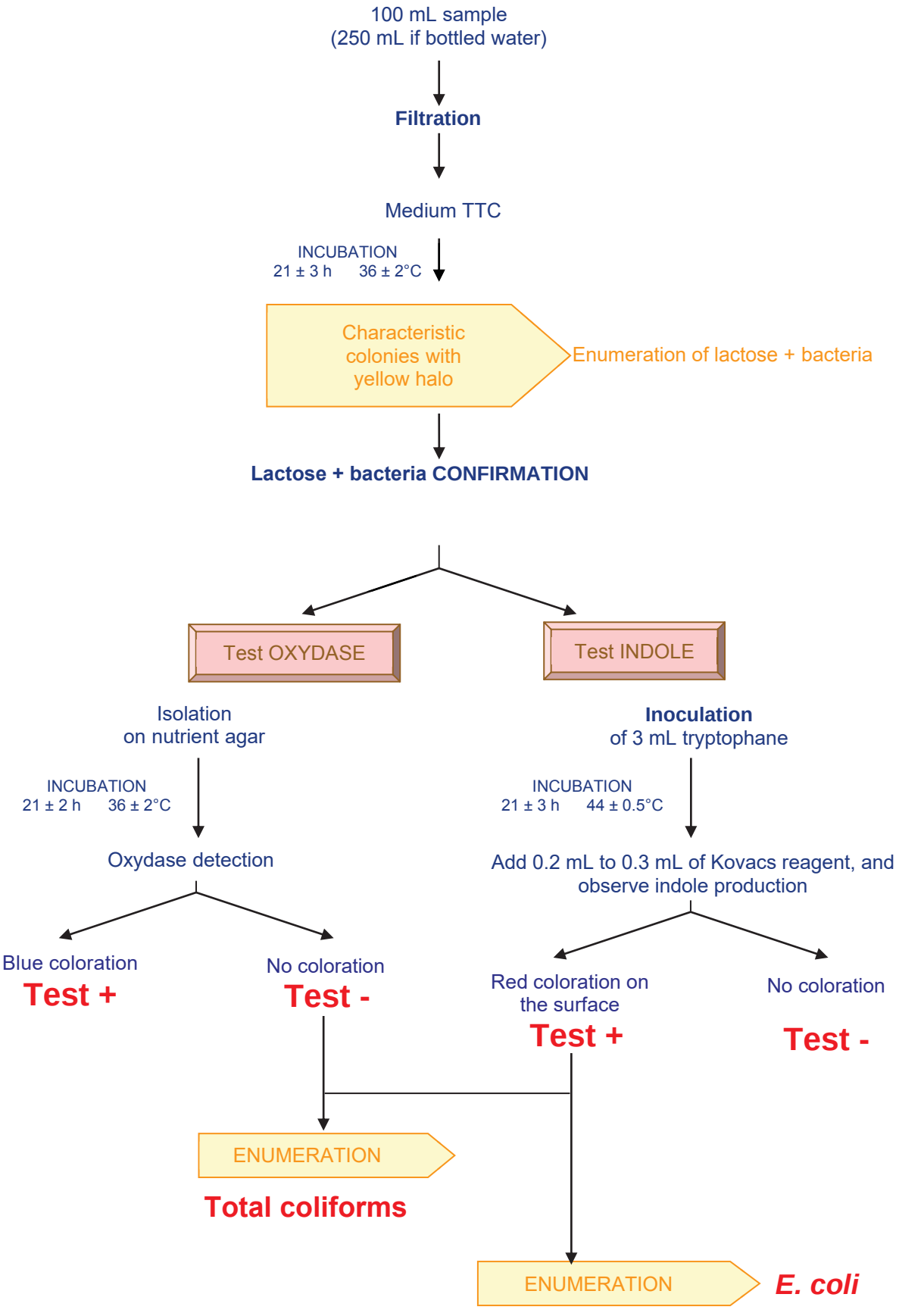
Detection ans enumeration of *E. coli* and coliforms bacteria



β-gal : activity β-galactosidase
GUD : activity β-glucuronidase

NORM NF EN ISO 9308-1 : 2000

Detection and enumeration of *E. coli* and coliforms bacteria
Part 1 : membrane filtration method



Appendix B1

RELATIVE ACCURACY
-
ARTIFICIAL CONTAMINATIONS

Contamination by stressed suspensions

Reference sample	Sample water		Strain			Type of stress	Evaluation of stress	CFU/ 100mL
	Code	Type water	Reference	Name	Origin			
Vicq	C5	Tap	EC18e	*E.coli*	Mains water - Verchocq	24h à -20°C + 1h à +20°C	0,20	6,00
Estaires	C6	Tap	EC18e	*E.coli*	Mains water - Verchocq	24h à -20°C + 1h à +20°C	0,20	12,00
Onnaing	C7	Tap	EC18e	*E.coli*	Mains water - Verchocq	24h à -20°C + 1h à +20°C	0,20	30,00
Bailleul	C8	Tap	EC18e	*E.coli*	Mains water - Verchocq	24h à -20°C + 1h à +20°C	0,20	60,00
Maubeuge	D1	Tap	EC19e	*E.coli*	Mains water - Mouvaux	24h à -20°C + 1h à +20°C	0,60	0,20
Anzin	D2	Tap	EC19e	*E.coli*	Mains water - Mouvaux	24h à -20°C + 1h à +20°C	0,60	0,40
Boussoir	D3	Tap	EC19e	*E.coli*	Mains water - Mouvaux	24h à -20°C + 1h à +20°C	0,60	0,80
Bruay	D4	Tap	EC19e	*E.coli*	Mains water - Mouvaux	24h à -20°C + 1h à +20°C	0,60	1,2
Beuvrage	E1	Tap	EC18e	*E.coli*	Mains water - Verchocq	24h -20°C +1h +20°C +5days -20°C +1h +20°C	0,42	1,2
Sainghin	E2	Tap	EC18e	*E.coli*	Mains water - Verchocq	24h -20°C +1h +20°C +5days -20°C +1h +20°C	0,42	2,4
Busnes	E3	Tap	EC18e	*E.coli*	Mains water - Verchocq	24h -20°C +1h +20°C +5days -20°C +1h +20°C	0,42	6,0
Crespin	E4	Tap	EC18e	*E.coli*	Mains water - Verchocq	24h -20°C +1h +20°C +5days -20°C +1h +20°C	0,42	12,0
Marquette	E5	Tap	EC3e	*E.coli*	Tap water - Bruille St Amand	24h -20°C +1h +20°C +4days -20°C +1h +20°C	0,00	1,2
Contrex	E6	Bottled	EC13e	*E.coli*	Mains water	24h -20°C +1h +20°C +4days -20°C +1h +20°C	0,30	2,4
Courmayeur	E7	Bottled	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	4j à -20°C + 1h à +20°C	0,08	0,3
Saint-Antonin	E8	Bottled	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	4j à -20°C + 1h à +20°C	0,08	0,6
Hépar	E9	Bottled	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	4j à -20°C + 1h à +20°C	0,08	1,2
Vittel	E10	Bottled	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	4j à -20°C + 1h à +20°C	0,08	2,4
Liévin	E11	Borehole	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	4j à -20°C + 1h à +20°C	0,08	0,3
Avion	E12	Borehole	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	4j à -20°C + 1h à +20°C	0,08	0,3
Mons	E13	Borehole	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	4j à -20°C + 1h à +20°C	0,08	1,2
Oisy	E14	Borehole	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	4j à -20°C + 1h à +20°C	0,08	2,4
Douai	E15	Borehole	EC15e	*E.coli*	Spring water - Bruille St Amand	4j à -20°C + 1h à +20°C	0,48	0,4
Boussois	E16	Borehole	EC15e	*E.coli*	Spring water - Bruille St Amand	4j à -20°C + 1h à +20°C	0,48	0,8
Arras	E17	Borehole	EC15e	*E.coli*	Spring water - Bruille St Amand	4j à -20°C + 1h à +20°C	0,48	2,0
Lomme	E18	Borehole	EC15e	*E.coli*	Spring water - Bruille St Amand	4j à -20°C + 1h à +20°C	0,48	4,0
Wattwiller	E19	Bottled	EC15e	*E.coli*	Spring water - Bruille St Amand	4j à -20°C + 1h à +20°C	0,48	0,5
Pierval	E20	Bottled	EC15e	*E.coli*	Spring water - Bruille St Amand	4j à -20°C + 1h à +20°C	0,48	1,0
Spa	E22	Bottled	EC15e	*E.coli*	Spring water - Bruille St Amand	4j à -20°C + 1h à +20°C	0,48	4,0
Jenlain	F1	Borehole	EC4e	*E.coli*	Surface water - Lac du Héron, Villeneuve d'Ascq (59)	24h -20°C +1h +20°C +24h -20°C +1h +20°C	0,15	0,6
			Cit3e	*Citrobacter youngae*	IPL, eau douce (cressonnière)	24h -20°C +1h +20°C +24h -20°C +1h +20°C	0,00	0,2
Ferrière	F2	Borehole	EC4e	*E.coli*	Surface water - Lac du Héron, Villeneuve d'Ascq (59)	24h -20°C +1h +20°C +24h -20°C +1h +20°C	0,15	1,2
			Cit3e	*Citrobacter youngae*	IPL, eau douce (cressonnière)	24h -20°C +1h +20°C +24h -20°C +1h +20°C	0,00	0,2
Trelon	F3	Borehole	EC4e	*E.coli*	Surface water - Lac du Héron, Villeneuve d'Ascq (59)	24h -20°C +1h +20°C +24h -20°C +1h +20°C	0,15	2,4
			Pan1e	*Pantoea spp*	Spring water (Bruille-les-St-Amand)	24h -20°C +1h + 20°C +24h -20°C +1h +20°C	0,00	0,0

Reference sample	Sample water		Strain			Type of stress	Evaluation of stress	CFU/ 100mL
	Code	Type water	Reference	Name	Origin			
Baives	F4	Borehole	EC4e	*E.coli*	Surface water - Lac du Héron, Villeneuve d'Ascq (59)	24h -20°C +1h +20°C +24h -20°C +1h +20°C	0,15	3,6
			Rah1e	*Rahnella aqualitilis*	Spring water (Bruille-les-St-Amand)	24h -20°C +1h + 20°C +24h -20°C +1h +20°C	0,00	0,0
Roche des Ecrins	F5	Bottled	EC17e	*E.coli*	Borehole water- Croix Fonsonnes	24h -20°C +1h +20°C +24h -20°C +1h +20°C	0,50	1,2
			Cit1e	*Citrobacter braakii*	IPL, eau douce (Borehole)	24h -20°C +1h +20°C +24h -20°C +1h +20°C	0,00	0,0
Sainte-Sophie, Cristalline	F6	Bottled	EC17e	*E.coli*	Borehole water - Croix Fonsonnes	24h -20°C +1h +20°C +24h -20°C +1h +20°C	0,50	2,4
			Cit1e	*Citrobacter braakii*	IPL, eau douce (Borehole)	24h -20°C +1h +20°C +24h -20°C +1h +20°C	0,00	0,0
Saint-Amand	F7	Bottled	EC17e	*E.coli*	Borehole water - Croix Fonsonnes	24h -20°C +1h +20°C +24h -20°C +1h +20°C	0,50	3,6
			Cit4e	*Citrobacter*	Borehole water (Paillencourt)	24h -20°C +1h +20°C +24h -20°C +1h +20°C	0,00	0,2
Volvic	F8	Bottled	EC17e	*E.coli*	Borehole water - Croix Fonsonnes	24h -20°C +1h +20°C +24h -20°C +1h +20°C	0,50	4,8
			Cit4e	*Citrobacter*	Borehole water (Paillencourt)	24h -20°C +1h +20°C +24h -20°C +1h +20°C	0,00	0,2
Vieille Chapelle	G1	Tap	EC3e	*E.coli*	Tap water - Bruille St Amand	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à	0,04	3,4
Laventie	G2	Tap	EC3e	*E.coli*	Tap water - Bruille St Amand	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à	0,04	6,7
Tourcoing	G3	Tap	EC3e	*E.coli*	Tap water - Bruille St Amand	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à	0,04	33,6
Erquinghem	G4	Tap	EC3e	*E.coli*	Tap water - Bruille St Amand	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à	0,04	67,2
Fouquereuil	G5	Tap	EC18e	*E.coli*	Mains water - Verchocq	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37	0,11	28,8
Wattrelos Beaulieu	G6	Tap	EC18e	*E.coli*	Mains water - Verchocq	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37	0,11	57,5
Roubaix	G7	Tap	EC18e	*E.coli*	Mains water - Verchocq	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37	0,11	115,0
Feignies	G8	Tap	EC18e	*E.coli*	Mains water - Verchocq	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37	0,11	230,0
Raismes	G9	Tap	EC19e	*E.coli*	Mains water - Mouvaux	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37	0,18	13,6
Rousies	G10	Tap	EC19e	*E.coli*	Mains water - Mouvaux	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37	0,18	27,2
Hinges	G11	Tap	EC19e	*E.coli*	Mains water - Mouvaux	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37	0,18	40,8
Wattrelos Plouys	G12	Tap	EC19e	*E.coli*	Mains water - Mouvaux	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37	0,18	54,4
Assevent	G13	Tap	EC21e	*E.coli*	Mains water, Mégève	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37	0,09	38,8
Armentière	G14	Tap	EC21e	*E.coli*	Mains water, Mégève	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37	0,09	77,5
Neuf Berquen	G15	Tap	EC21e	*E.coli*	Mains water, Mégève	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37	0,09	155,0
Lille	G16	Tap	EC21e	*E.coli*	Mains water, Mégève	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37	0,09	310,0
Verchain	H1	Borehole	EC4e	*E.coli*	Surface water - Lac du Héron, Villeneuve d'Ascq (59)	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,13	5,2
Liévin	H2	Borehole	EC4e	*E.coli*	Surface water - Lac du Héron, Villeneuve d'Ascq (59)	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,13	10,3
Solimetz	H3	Borehole	EC4e	*E.coli*	Surface water - Lac du Héron, Villeneuve d'Ascq (59)	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,13	51,6
Auxil	H4	Borehole	EC4e	*E.coli*	Surface water - Lac du Héron, Villeneuve d'Ascq (59)	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,13	103,2
Mons	H5	Borehole	EC15e	*E.coli*	Spring water - Bruille St Amand	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,00	8,6
Oisy	H6	Borehole	EC15e	*E.coli*	Spring water - Bruille St Amand	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,00	17,3
Avion	H7	Borehole	EC15e	*E.coli*	Spring water - Bruille St Amand	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,00	43,2
Arras	H8	Borehole	EC15e	*E.coli*	Spring water - Bruille St Amand	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,00	86,4
Quiery	H9	Eau Brute	EC24e	*E.coli*	well water, Wannehain	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,06	9,8
Auxi	H10	Eau Brute	EC24e	*E.coli*	well water, Wannehain	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,06	19,7
Courières	H11	Borehole	EC24e	*E.coli*	well water, Wannehain	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,06	49,2

Reference sample	Sample water		Strain			Type of stress	Evaluation of stress	CFU/ 100mL
	Code	Type water	Reference	Name	Origin			
Rollancourt	H12	Borehole	EC24e	*E.coli*	well water, Wannehain	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,06	98,4
Lanorelies	H13	Borehole	EC40e	*E.coli*	Estuaire de l'Aa, Gravelines	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,03	8,5
Le Quesnoy	H14	Borehole	EC40e	*E.coli*	Estuaire de l'Aa, Gravelines	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,03	17
Marbaix	H15	Borehole	EC40e	*E.coli*	Estuaire de l'Aa, Gravelines	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,03	42,4
Saint Aubin	H16	Borehole	EC40e	*E.coli*	Estuaire de l'Aa, Gravelines	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,03	84,8
Penin	J1	Borehole	EC24e	*E.coli*	well water, Wannehain	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37 °C	0,1	36
Liévin	J2	Borehole	EC24e	*E.coli*	well water, Wannehain	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37 °C	0,1	72
Arras	J3	Borehole	EC15e	*E.coli*	Spring water - Bruille St Amand	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,1	8,1
Avion	J4	Borehole	EC15e	*E.coli*	Spring water - Bruille St Amand	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,1	16,2
Montroucous	J5	Bottled	EC15e	*E.coli*	Spring water - Bruille St Amand	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,1	16,2
Thonon	J6	Bottled	EC15e	*E.coli*	Spring water - Bruille St Amand	ajout de 0,3ml de HCl 0,2M pendant 1h30	0,1	40,5
Douai	K1	Tap	EC13e	*E.coli*	Mains water	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37 °C + 0,1ml de solution de chlore à 3% pendant 10min	0,3	1,9
Roubaix	K2	Tap	EC13e	*E.coli*	Mains water	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37 °C + 0,1ml de solution de chlore à 3% pendant 10min	0,3	3,8
Bersée	K9	Tap	EC18e	*E.coli*	Mains water - Verchocq	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37 °C + 0,1ml de solution de chlore à 3% pendant 10min	0	0
Lille	K10	Tap	EC18e	*E.coli*	Mains water - Verchocq	1h à -20°C + 5min à +37°C + 1h à -20°C + 5min à +37 °C + 0,1ml de solution de chlore à 3% pendant 10min	0	0
Louise	P1	Bottled	EC24e	*E.coli*	well water, Wannehain	ajout de 0,2ml de HCl 0,2M pendant 1h30	1,3	9
Orée du Bois	P2	Bottled	EC24e	*E.coli*	well water, Wannehain	ajout de 0,2ml de HCl 0,2M pendant 1h30	1,3	18
Badoit	P3	Bottled	EC17e	*E.coli*	Borehole water - Croix Fonsonnes	1h à -20°C + 4min à +37°C + 1h à -20°C + 4min à +37 °C + 1h à -20°C + 4min à +37°C	0,25	15
Quézac	P5	Bottled	EC24e	*E.coli*	well water, Wannehain	1h à -20°C + 4min à +37°C + 1h à -20°C + 4min à +37 °C + 1h à -20°C + 4min à +37°C	0,7	104
Evian	P6	Bottled	EC24e	*E.coli*	well water, Wannehain	1h à -20°C + 4min à +37°C + 1h à -20°C + 4min à +37 °C + 1h à -20°C + 4min à +37°C	0,7	208
Rozana	P7	Bottled	EC24e	*E.coli*	well water, Wannehain	1h à -20°C + 4min à +37°C + 1h à -20°C + 4min à +37 °C + 1h à -20°C + 4min à +37°C	0,12	4
San Pellegrino	P8	Bottled	EC24e	*E.coli*	well water, Wannehain	1h à -20°C + 4min à +37°C + 1h à -20°C + 4min à +37 °C + 1h à -20°C + 4min à +37°C	0,12	8
Saint-Antonin	Q1	Bottled	EC25e	*E.coli*	Underground water, Cregy les meaux	1h à -20°C + 10min à +37°C + 1h à -20°C + 10min à + 37°C + 1h à -20°C + 5min à +37°C	0,9	0,8
Courmayeur	Q2	Bottled	EC25e	*E.coli*	Underground water, Cregy les meaux	1h à -20°C + 10min à +37°C + 1h à -20°C + 10min à + 37°C + 1h à -20°C + 5min à +37°C	0,9	1,6
Vittel	Q3	Bottled	EC25e	*E.coli*	Underground water, Cregy les meaux	1h à -20°C + 10min à +37°C + 1h à -20°C + 10min à + 37°C + 1h à -20°C + 5min à +37°C	0,9	2,4
Brias	T2	Borehole	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	35min +55°C + 30min -80°C	2	122
Hépar	T3	Bottled	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	35min +55°C + 30min -80°C	2	152

Reference sample	Sample water		Strain			Type of stress	Evaluation of stress	CFU/ 100mL
	Code	Type water	Reference	Name	Origin			
Bouvignies	T4	Tap	EC19e	*E.coli*	Mains water - Mouvaux	35min +55°C + 30min -80°C	1,8	4
Houplines	T8	Tap	EC19e	*E.coli*	Mains water - Mouvaux	24h -20°C + 15min +20°C + 24h -20°C + 15min +20°C	1,6	9
Bersée	T9	Tap	EC19e	*E.coli*	Mains water - Mouvaux	24h -20°C + 15min +20°C + 24h -20°C + 15min +20°C	1,6	13,9
Warlencourt	T12	Borehole	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	24h -20°C + 15min +20°C + 24h -20°C + 15min +20°C	0,4	29
Saint Michel	T13	Borehole	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	24h -20°C + 15min +20°C + 24h -20°C + 15min +20°C	0,4	36,3
Montroucous	T14	Bottled	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	24h -20°C + 15min +20°C + 24h -20°C + 15min +20°C	0,4	45,9
Saint-Amand	T15	Bottled	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	24h -20°C + 15min +20°C + 24h -20°C + 15min +20°C	0,4	58
Perrier	T16	Bottled	EC17e	*E.coli*	Borehole water - Croix Fonsonnes	24h -20°C + 15min +20°C + 24h -20°C + 15min +20°C	1,1	20
San Pellegrino	T17	Bottled	EC17e	*E.coli*	Borehole water - Croix Fonsonnes	24h -20°C + 15min +20°C + 24h -20°C + 15min +20°C	1,1	26,7
Vichy célestin	U5	Bottled	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	35min +55°C + 30min -80°C	0	-
Salvetat	U6	Bottled	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	35min +55°C + 30min -80°C	0	-
Saint-Yorre	U7	Bottled	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	35min +55°C + 30min -80°C	0	-
Badoit	U8	Bottled	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	35min +55°C + 30min -80°C	0	-
Maulde	U9	Borehole	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	35min +55°C + 30min -80°C	0	-
Balhant	U10	Borehole	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	35min +55°C + 30min -80°C	0	-
Escaudain	U11	Borehole	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	35min +55°C + 30min -80°C	0	-
Wallers	U12	Borehole	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	35min +55°C + 30min -80°C	0	-
Saint-Amand	U17	Tap	EC19e	*E.coli*	Mains water - Mouvaux	35min +55°C + 30min -80°C	0,62	228
Lille	U18	Tap	EC19e	*E.coli*	Mains water - Mouvaux	35min +55°C + 30min -80°C	0,62	285
Louise	V5	Bottled	EC3e	*E.coli*	Tap water - Bruille St Amand	35min +55°C + 30min -80°C	0	-
Roche des Ecrins	V6	Bottled	EC3e	*E.coli*	Tap water - Bruille St Amand	35min +55°C + 30min -80°C	0	-
Contrex	V7	Bottled	EC3e	*E.coli*	Tap water - Bruille St Amand	35min +55°C + 30min -80°C	0	-
Evian	V8	Bottled	EC3e	*E.coli*	Tap water - Bruille St Amand	35min +55°C + 30min -80°C	0	-
Saint-Yorre	V9	Bottled	EC3e	*E.coli*	Tap water - Bruille St Amand	35min +55°C + 30min -80°C	0	-
Perrier	V10	Bottled	EC3e	*E.coli*	Tap water - Bruille St Amand	35min +55°C + 30min -80°C	0	-
Saint-Antonin	W7	Bottled	EC15e	*E.coli*	Spring water - Bruille St Amand	35min +55°C + 30min -80°C	0,55	5
Contrex	W8	Bottled	EC15e	*E.coli*	Spring water - Bruille St Amand	35min +55°C + 30min -80°C	0,55	10
Vittel	W9	Bottled	EC15e	*E.coli*	Spring water - Bruille St Amand	35min +55°C + 30min -80°C	0,55	20
Saint-Amand	W10	Bottled	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	35min +55°C + 30min -80°C	0,72	43
Nestlé Aquarel (spring des Acacias)	W11	Bottled	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	35min +55°C + 30min -80°C	0,72	86
Hépar	W12	Bottled	EC16e	*E.coli*	Borehole water - Noyelle sur Selle	35min +55°C + 30min -80°C	0,72	129
Roche des Ecrins	W13	Bottled	EC17e	*E.coli*	Borehole water - Croix Fonsonnes	35min +55°C + 30min -80°C	1,55	10
Opaline (spring Oiselle)	W14	Bottled	EC17e	*E.coli*	Borehole water - Croix Fonsonnes	35min +55°C + 30min -80°C	1,55	20
Bru (spring Bron)	W15	Bottled	EC17e	*E.coli*	Borehole water - Croix Fonsonnes	35min +55°C + 30min -80°C	1,55	40

Sample reference	Sample water			Contamination	Mixed volume
	Code	Type of water	Category		
Tourcoing	M4	Tap	1a	mix Ghyveldes (lac des hérons)	**82 ml**
Neuville-en-Ferrain	M5	Tap	1a	mix Ghyveldes (lac des hérons)	**53 ml**
Lille	M6	Tap	1a	mix Gravelines (les douves)	**106 ml**
Wasquehal	M7	Tap	1a	mix Tap Prouzel	**82 ml**
Bruille-Saint-Amand	M8	spring	2a	mix Tap Prouzel	**109 ml**
La Madeleine	N1	Tap	1a	mix well Bois Grenier	**109 ml**
Arras	N2	Borehole	2a	mix well Bois Grenier	**5 ml**
Avion	N3	Eau Brute	2a	mix well Bois Grenier	**5 ml**
Houpline	N4	Tap	1a	mix well Wervicq Sud	**5 ml**
Bruille-Saint-Amand	N5	spring	2a	mix well Wervicq Sud	**5 ml**
Courières	N6	Borehole	2a	mix well Wervicq Sud	**5 ml**
Bois Grenier	N7	Tap	1a	mix Venerolles (Piezo)	**5 ml**
Penin	N8	Borehole	2a	mix Venerolles (Piezo)	**0,25 ml**
Liévin	N9	Eau Brute	2a	mix Venerolles (Piezo)	**0,25 ml**
Vis	N10	Borehole	2a	mix well Wervicq Sud	**0,25 ml**
Hendecourt	N11	Borehole	2a	mix well Wervicq Sud	**3,5 ml**
Mons en Baroeul	N12	Tap	1a	mix spring Bruille St Amand	**3,5 ml**
Metz	N13	Borehole	2a	mix spring Bruille St Amand	**80 ml**
Ecoust	N14	Borehole	2a	mix spring Bruille St Amand	**80 ml**
Essars	N15	Eau Brute	2a	mix well Wervicq Sud	**80 ml**
Douai	N16	Tap	1a	mix well Bailleul	**3,5 ml**
Billy	N17	Borehole	2a	mix well Bailleul	**30 ml**
Violagnes	N18	Eau Brute	2a	mix well Bailleul	**30 ml**
Hendecourt	N19	Borehole	2a	mix well Wervicq Sud	**30 ml**
Essars	N20	Eau Brute	2a	mix well Wervicq Sud	**3,5 ml**
Verdun	N21	Eau Brute	2a	mix well Wervicq Sud	**0,8 ml**
Camphin-en-Pévèle	N22	Tap	1a	mix well "Marchandise" Villeneuve d'ascq	**0,6 ml**
Wingles	N23	Eau Brute	2a	mix well "Marchandise" Villeneuve d'ascq	**125 ml**
Preures	N24	Eau Brute	2a	mix well "Marchandise" Villeneuve d'ascq	**125 ml**
Hellemmes	O1	Tap	1a	mix well Beuvry CHR	**125 ml**
Planques	O2	Eau Brute	2a	mix well Beuvry CHR	**70 ml**
Fléchin	O3	Eau Brute	2a	mix well Beuvry CHR	**70 ml**
Whylder	O4	Tap	1a	mix well Mouchins(1)	**100 ml**
Camblain	O5	Eau Brute	2a	mix well Mouchins(1)	**7,5 ml**
Arras	O6	Eau Brute	2a	mix well Mouchins(1)	**7,5 ml**
Roncq	R1	Tap	1a	mix well Bois Grenier	**9 ml**

Sample reference	Sample water			Contamination	Mixed volume
	Code	Type of water	Category		
Fremicourt	R2	Borehole	2a	mix well Bois Grenier	**5 ml**
Noyelles	R3	Borehole	2a	mix well Bois Grenier	**10 ml**
Lille	R4	Tap	1a	mix well Wervicq Sud	**15 ml**
Fruges	R5	Borehole	2a	mix well Wervicq Sud	**3 ml**
Agny	R6	Borehole	2a	mix well Wervicq Sud	**6 ml**
Villeneuve d'Ascq	S1	Tap	1a	mix well Marquain	**9 ml**
Hulluch	S2	Borehole	2a	mix well Marquain	**1,7 ml**
Houdain	S3	Borehole	2a	mix well Marquain	**3,5 ml**
Avelin	S4	Tap	1a	mix well Nieppe	**2,5 ml**
Hénin	S5	Tap	1a	mix well Nieppe	**28 ml**
Grande Synthe	S6	Tap	1a	mix well Nieppe	**56 ml**
Arleux	S7	Tap	1a	mix well Nieppe	**84 ml**
Vendin	S8	Borehole	2a	mix well Nieppe	**11 ml**
Mercatel	S9	Borehole	2a	mix well Nieppe	**39 ml**
Wangles	S10	Borehole	2a	mix well Nieppe	**67 ml**
Havrincourt	S11	Borehole	2a	mix well Nieppe	**94 ml**
Lambersart	T1	Tap	1a	mix eau alimentation Caestre	**112 ml**
Pécquencourt	U1	Tap	1a	mix well Nieppe	**125 ml**
Roubaix	U2	Tap	1a	mix well Nieppe	**60 ml**
Solesmes	U3	Borehole	2a	mix well Nieppe	**120 ml**
Saulzoir	U4	Borehole	2a	mix well Nieppe	**60 ml**
Saint Pol	V1	Borehole	2a	mix well Mourcours	**120 ml**
Douvrin	V2	Borehole	2a	mix well Mourcours	**0,3 ml**
Rollancourt	V3	Borehole	2a	mix well Mourcours	**0,4 ml**
Arras	V4	Borehole	2a	mix well Mourcours	**0,5 ml**
Bucquoy	W 1	Borehole	2a	mix well Mourcours	**0,6 ml**
Teneur	W 2	Borehole	2a	mix well Mourcours	**0,8 ml**
Baisieux	W 3	Tap	1a	mix well Mourcours	**1,0 ml**
Montigny-en-gohelle	W 4	Tap	1a	mix well Mourcours	**1,0 ml**
Bois Grenier	W 5	Tap	1a	mix well Mourcours	**1,5 ml**
Lambersart	W 6	Tap	1a	mix well Mourcours	**2,0 ml**
Nieppe	X7	Tap	1a	mix spring Montbayen, St Martin d'Ablois	**2,5 ml**
Roncq	X8	Tap	1a	mix spring Montbayen, St Martin d'Ablois	**4,0 ml**
Estrees	X9	Borehole	2a	mix spring Montbayen, St Martin d'Ablois	**8,0 ml**
Arras	X10	Borehole	2a	mix spring Montbayen, St Martin d'Ablois	**12,0 ml**

Appendix B2

RELATIVE ACCURACY - RAW RESULTS

Caption

cat : ccategory of the scope
 CA : artificial contamination
o : oui (réalisation d'une CA)
n : non (naturaly contaminated sample)
lac+ : fermentation du lactose positive
ox+ : test oxydase positif
indole + : test indole positif
β-gal+ : β-D-Galactosidase (Gal) positive
GUD+ : β-D-Glucuronidase (Gluc) positive
GUD- : β-D-Glucuronidase (Gluc) négative
CT : total coliforms
EC : *E. coli*
INC : incomptable (important background microflora)
 C: total of counted colonies
Σ

Mineral or spring waters (R1 à R36) = bottled water (analysis of 250 mL)
Spring water (name of the city) = non-bottled water (analysis of 100 mL)

Tap water

Code	Echantillon d'eau	Cat	CA	Quantité filtrée (ml)	NF EN ISO 9308-1									Méthode COMPASS® cc Agar							
					Colonies typiques sur gélose TTC (24 et 48 h 36°C)				Incubation à 44°C (24h)	Résultat (UFC /100 mL)				Réplicat 1				Réplicat 2			
					Coliformes totaux (lac+, ox -)		*E. coli* (lac+, ox-, indole +)			Coliformes totaux		*E. coli*		Colonies caractéristiques		Résultat (UFC /100 mL)		Colonies caractéristiques		Résultat (UFC /100 mL)	
					Réplicat 1	Réplicat 2	Réplicat 1	Réplicat 2		Réplicat 1	Réplicat 2	Réplicat 1	Réplicat 2	Colonies bgal+/ GUD-	Colonies bgal+/ GUD+	CT (100 mL)	*E. coli* (100 mL)	Colonies bgal+/ GUD-	Colonies bgal+/ GUD+	CT (100 mL)	*E. coli* (100 mL)
C5	Réseau, Vicq	1a	o	100	2	3	2	3	-	2,0E+00	3,0E+00	2,0E+00	3,0E+00	0	1	1,0E+00	1,0E+00	0	4	4,0E+00	4,0E+00
C6	Réseau, Estaires	1a	o	100	10	8	10	8	-	1,0E+01	8,0E+00	1,0E+01	8,0E+00	0	5	5,0E+00	5,0E+00	0	6	6,0E+00	6,0E+00
C7	Réseau, Onnaing	1a	o	100	24	17	24	17	-	2,4E+01	1,7E+01	2,4E+01	1,7E+01	0	13	1,3E+01	1,3E+01	0	15	1,5E+01	1,5E+01
C8	Réseau, Bailleul	1a	o	100	35	49	35	49	-	3,5E+01	4,9E+01	3,5E+01	4,9E+01	0	27	2,7E+01	2,7E+01	0	20	2,0E+01	2,0E+01
D1	Réseau, Maubeuge	1a	o	100	0	0	0	0	-	<1	<1	<1	<1	0	0	<1	<1	0	0	<1	<1
D2	Réseau, Anzin	1a	o	100	1	0	1	0	-	1,0E+00	<1	1,0E+00	<1	0	2	2,0E+00	2,0E+00	0	0	<1	<1
D3	Réseau, Boussoir	1a	o	100	1	2	1	2	-	1,0E+00	2,0E+00	1,0E+00	2,0E+00	0	0	<1	<1	0	1	1,0E+00	1,0E+00
D4	Réseau, Bruay	1a	o	100	1	0	1	0	-	1,0E+00	<1	1,0E+00	<1	0	1	1,0E+00	1,0E+00	0	1	1,0E+00	1,0E+00
E1	Réseau, Beuvrage	1a	o	100	2	0	2	0	-	2,0E+00	<1	2,0E+00	<1	0	0	<1	<1	0	0	<1	<1
E2	Réseau, Sainghin	1a	o	100	0	0	0	0	-	<1	<1	<1	<1	0	0	<1	<1	0	1	1,0E+00	1,0E+00
E3	Réseau, Busnes	1a	o	100	2	0	2	0	-	2,0E+00	<1	2,0E+00	<1	0	0	<1	<1	0	0	<1	<1
E4	Réseau, Crespin	1a	o	100	7	3	7	3	-	7,0E+00	3,0E+00	7,0E+00	3,0E+00	0	0	<1	<1	0	2	2,0E+00	2,0E+00
E5	Réseau, Marquette	1a	o	100	3	0	3	0	-	3,0E+00	<1	3,0E+00	<1	0	0	<1	<1	0	0	<1	<1
G1	Réseau, Vieille Chapelle	1a	o	100	8	3	8	3	-	8,0E+00	3,0E+00	8,0E+00	3,0E+00	0	3	3,0E+00	3,0E+00	0	9	9,0E+00	9,0E+00
G2	Réseau, Laventie	1a	o	100	8	7	8	7	-	8,0E+00	7,0E+00	8,0E+00	7,0E+00	0	8	8,0E+00	8,0E+00	0	10	1,0E+01	1,0E+01
G3	Réseau, Tourcoing	1a	o	100	41	34	41	34	-	4,1E+01	3,4E+01	4,1E+01	3,4E+01	0	36	3,6E+01	3,6E+01	0	28	2,8E+01	2,8E+01
G4	Réseau, Erquinghem	1a	o	100	93	75	93	75	-	9,3E+01	7,5E+01	9,3E+01	7,5E+01	0	81	8,1E+01	8,1E+01	0	80	8,0E+01	8,0E+01
G5	Réseau, Fouquereuil	1a	o	100	28	28	28	28	-	2,8E+01	2,8E+01	2,8E+01	2,8E+01	0	27	2,7E+01	2,7E+01	0	13	1,3E+01	1,3E+01
G6	Réseau, Wattrelos Beaulieu	1a	o	100	52	45	52	45	-	5,2E+01	4,5E+01	5,2E+01	4,5E+01	0	28	2,8E+01	2,8E+01	0	32	3,2E+01	3,2E+01
G7	Réseau, Roubaix	1a	o	100	59	69	59	69	-	5,9E+01	6,9E+01	5,9E+01	6,9E+01	0	90	9,0E+01	9,0E+01	0	96	9,6E+01	9,6E+01
G8	Réseau, Feignies	1a	o	100	129	134	129	134	-	1,3E+02	1,3E+02	1,3E+02	1,3E+02	0	109	1,1E+02	1,1E+02	0	95	9,5E+01	9,5E+01
G9	Réseau, Raismes	1a	o	100	14	16	14	16	-	1,4E+01	1,6E+01	1,4E+01	1,6E+01	0	12	1,2E+01	1,2E+01	0	6	6,0E+00	6,0E+00
G10	Réseau, Rousies	1a	o	100	35	23	35	23	-	3,5E+01	2,3E+01	3,5E+01	2,3E+01	0	29	2,9E+01	2,9E+01	0	32	3,2E+01	3,2E+01
G11	Réseau, Hinges	1a	o	100	42	46	42	46	-	4,2E+01	4,6E+01	4,2E+01	4,6E+01	0	36	3,6E+01	3,6E+01	0	38	3,8E+01	3,8E+01
G12	Réseau, Wattrelos Plouys	1a	o	100	76	57	76	57	-	7,6E+01	5,7E+01	7,6E+01	5,7E+01	0	56	5,6E+01	5,6E+01	0	47	4,7E+01	4,7E+01
G13	Réseau, Assevent	1a	o	100	51	44	51	44	-	5,1E+01	4,4E+01	5,1E+01	4,4E+01	0	39	3,9E+01	3,9E+01	0	40	4,0E+01	4,0E+01
G14	Réseau, Armentière	1a	o	100	71	94	71	94	-	7,1E+01	9,4E+01	7,1E+01	9,4E+01	0	82	8,2E+01	8,2E+01	0	73	7,3E+01	7,3E+01
G15	Réseau, Neuf Berquen	1a	o	100	163	158	163	158	-	1,6E+02	1,6E+02	1,6E+02	1,6E+02	0	134	1,3E+02	1,3E+02	0	145	1,5E+02	1,5E+02
G16	Réseau, Lille	1a	o	100	262	252	262	252	-	>100	>100	>100	>100	0	294	2,9E+02	>100	0	264	2,6E+02	>100
K1	Réseau, Douai	1a	o	100	0	0	0	0	-	<1	<1	<1	<1	0	0	<1	<1	0	0	<1	<1
K2	Réseau, Roubaix	1a	o	100	0	1	0	0	-	<1	1,0E+00	<1	<1	0	0	<1	<1	0	0	<1	<
K9	Réseau, Bersée	1a	o	100	0	0	0	0	-	<1	<1	<1	<1	0	0	<1	<1	0	0	<1	<1
K10	Réseau, Lille	1a	o	100	2	0	2	0	-	2,0E+00	<1	2,0E+00	<1	0	0	<1	<1	0	1	1,0E+00	1,0E+00
M4	Réseau, Tourcoing	1a	o	100	5	6	5	6	-	5,0E+00	6,0E+00	5,0E+00	6,0E+00	2	3	5,0E+00	3,0E+00	3	12	1,5E+01	1,2E+01
M5	Réseau, Neuville-en-Ferrain	1a	o	100	18	15	17	15	-	1,8E+01	1,5E+01	1,7E+01	1,5E+01	3	9	1,2E+01	9,0E+00	3	8	1,1E+01	8,0E+00
M6	Réseau, Lille	1a	o	100	inc	inc	inc	inc	-	inc	inc	inc	inc	15	1	1,6E+01	1,0E+00	10	0	1,0E+01	<1
M7	Réseau, Wasquehal	1a	o	100	6	5	5	5	-	6,0E+00	5,0E+00	5,0E+00	5,0E+00	1	6	7,0E+00	6,0E+00	1	3	4,0E+00	3,0E+00
N1	Réseau, La Madeleine	1a	o	100	9	10	4	5	-	9,0E+00	1,0E+01	4,0E+00	5,0E+00	27	1	2,8E+01	1,0E+00	22	2	2,4E+01	2,0E+00
N4	Réseau, Houpline	1a	o	100	57	58	0	0	-	5,7E+01	5,8E+01	<1	<1	23	15	3,8E+01	1,5E+01	23	10	3,3E+01	1,0E+01
N7	Réseau, Bois Grenier	1a	o	100	0	0	0	0	-	<1	<1	<1	<1	6	14	2,0E+01	1,4E+01	9	10	1,9E+01	1,0E+01
N12	Réseau, Mons en Baroeul	1a	o	100	0	0	0	0	1	<1	<1	<1	<1	14	0	1,4E+01	<1	13	0	1,3E+01	<1
N16	Réseau, Douai	1a	o	100	7	10	0	0	0	7,0E+00	1,0E+01	<1	<1	6	2	8,0E+00	2,0E+00	7	3	1,0E+01	3,0E+00
N22	Réseau, Camphin en Pévèle	1a	o	100	0	0	0	0	-	<1	<1	<1	<1	1	0	1,0E+00	<1	0	0	<1	<1
O1	Réseau, Hellemmes	1a	o	100	10	13	5	6	3	1,0E+01	1,3E+01	5,0E+00	6,0E+00	5	1	6,0E+00	1,0E+00	13	6	1,9E+01	6,0E+00
R1	Réseau, Roncq	1a	o	100	2	3	0	0	-	2,0E+00	3,0E+00	<1	<1	1	0	1,0E+00	<1	2	0	2,0E+00	<1
R4	Réseau, Lille	1a	o	100	1	1	0	0	-	1,0E+00	1,0E+00	<1	<1	0	0	<1	<1	0	0	<1	<1
S1	Réseau, Villeneuve d'Ascq	1a	o	100	0	0	0	0	-	<1	<1	<1	<1	1	0	1,0E+00	<1	0	0	<1	<1
S4	Réseau, Avelin	1a	o	100	8	12	5	11	4	8,0E+00	1,2E+01	5,0E+00	1,1E+01	8	3	1,1E+01	3,0E+00	10	5	1,5E+01	5,0E+00
S5	Réseau, Hénin	1a	o	100	25	13	24	13	14	2,5E+01	1,3E+01	2,4E+01	1,3E+01	23	10	3,3E+01	1,0E+01	25	6	3,1E+01	6,0E+00
S6	Réseau, Grande Synthe	1a	o	100	29	22	23	20	13	2,9E+01	2,2E+01	2,3E+01	2,0E+01	23	19	4,2E+01	1,9E+01	30	14	4,4E+01	1,4E+01
S7	Réseau, Arleux	1a	o	100	32	20	28	16	23	3,2E+01	2,0E+01	2,8E+01	1,6E+01	12	12	2,4E+01	1,2E+01	20	16	3,6E+01	1,6E+01
T1	Réseau, Lambersart	1a	o	100	25	31	17	21	20	2,5E+01	3,1E+01	1,7E+01	2,1E+01	16	19	3,5E+01	1,9E+01	29	27	5,6E+01	2,7E+01
T4	Réseau, Bouvignies	1a	o	100	3	2	3	2	-	3,0E+00	2,0E+00	3,0E+00	2,0E+00	0	4	4,0E+00	4,0E+00	0	2	2,0E+00	2,0E+00
T8	Réseau, Houplines	1a	o	100	2	0	2	0	-	2,0E+00	<1	2,0E+00	<1	0	0	<1	<1	0	1	1,0E+00	1,0E+00
T9	Réseau, Bersée	1a	o	100	2	0	2	0	-	2,0E+00	<1	2,0E+00	<1	0	0	<1	<1	0	1	1,0E+00	1,0E+00
U1	Réseau, Pécquencourt	1a	o	100	23	22	17	18	9	2,3E+01	2,2E+01	1,7E+01	1,8E+01	20	7	2,7E+01	7,0E+00	19	12	3,1E+01	1,2E+01
U2	Réseau, Roubaix	1a	o	100	31	27	24	27	18	3,1E+01	2,7E+01	2,4E+01	2,7E+01	18	19	3,7E+01	1,9E+01	29	22	5,1E+01	2,2E+01
U17	Réseau, Saint Amand	1a	o	100	58	86	58	86	-	5,8E+01	8,6E+01	5,8E+01	8,6E+01	0	59	5,9E+01	5,9E+01	0	55	5,5E+01	5,5E+01
U18	Réseau, Lille	1a	o	100	76	74	76	74	-	7,6E+01	7,4E+01	7,6E+01	7,4E+01	0	44	4,4E+01	4,4E+01	0	75	7,5E+01	7,5E+01
U19	Réseau, Roubaix	1a	o	100	50	50	25	25	18	5,0E+01	5,0E+01	2,5E+01	2,5E+01	>100	47	>100	4,7E+01	>100	50	>100	5,0E+01
W3	Réseau, Baisieux	1a	o	100	>100	>100	24	11	6	>100	>100	2,4E+01	1,1E+01	>100	21	>100	2,1E+01	>100	19	>100	1,9E+01
W4	Réseau, Montigny en gohelle	1a	o	100	>100	>100	22	13	10	>100	>100	2,2E+01	1,3E+01	>100	26	>100	2,6E+01	>100	22	>100	2,2E+01
W5	Réseau, Bois Grenier	1a	o	100	>100	>100	18	21	9	>100	>100	1,8E+01	2,1E+01	>100	14	>100	1,4E+01	>100	11	>100	1,1E+01
W6	Réseau, Lambersart	1a	o	100	>100	>100	22	24	15	>100	>100	2,2E+01	2,4E+01	>100	28	>100	2,8E+01	>100	41	>100	4,1E+01
X7	Réseau, Nieppe	1a	o	100	5	6	2	1	-	5,0E+00	6,0E+00	2,0E+00	1,0E+00	3	0	3,0E+00	<1	5	0	5,0E+00	<1
X8	Réseau, Roncq	1a	o	100	10	14	0	0	-	1,0E+01	1,4E+01	<1	<1	4	1	5,0E+00	1,0E+00	5	1	6,0E+00	1,0E+00

Bottled water

Code	Echantillon d'eau	Cat	CA	Quantité filtrée (mL)	NF EN ISO 9308-1								Méthode COMPASS® cc Agar							
					Colonies typiques sur gélose TTC (24 et 48 h 36°C)				Résultat (UFC /100 mL)				Réplicat 1				Réplicat 2			
					Coliformes totaux (lac+, ox -)		***E. coli*** (lac+, ox-, indole +)		**Coliformes totaux**		***E. coli***		Colonies caractéristiques		Résultat (UFC /100 mL)		Colonies caractéristiques		Résultat (UFC /100 mL)	
					Réplicat 1	Réplicat 2	Réplicat 1	Réplicat 2	Réplicat 1	Réplicat 2	Réplicat 1	Réplicat 2	Colonies bgal+/ GUD-	Colonies bgal+/ GUD+	**CT** (100 mL)	***E. coli*** (100 mL)	Colonies bgal+/ GUD-	Colonies bgal+/ GUD+	**CT** (100 mL)	***E. coli*** (100 mL)
E6	R1	2a	o	250	2	0	2	0	8,0E-01	<1	8,0E-01	<1	0	0	<1	<1	0	0	<1	<1
E7	R2	2a	o	250	1	0	1	0	4,0E-01	<1	4,0E-01	<1	0	0	0,0E+00	<1	0	0	<1	<1
E8	R3	2a	o	250	1	0	1	0	4,0E-01	<1	4,0E-01	<1	0	0	0,0E+00	<1	0	1	4,0E-01	4,0E-01
E9	R4	2a	o	250	1	1	1	1	4,0E-01	4,0E-01	4,0E-01	4,0E-01	0	3	1,2E+00	1,2E+00	0	1	4,0E-01	4,0E-01
E10	R5	2a	o	250	4	3	4	3	1,6E+00	1,2E+00	1,6E+00	1,2E+00	0	1	4,0E-01	4,0E-01	0	5	2,0E+00	2,0E+00
E19	R6	2a	o	250	1	0	1	0	4,0E-01	<1	4,0E-01	<1	0	0	0,0E+00	<1	0	1	4,0E-01	4,0E-01
E20	R7	2a	o	250	1	1	1	1	4,0E-01	4,0E-01	4,0E-01	4,0E-01	0	1	4,0E-01	4,0E-01	0	2	8,0E-01	8,0E-01
E22	R8	2a	o	250	2	9	2	9	8,0E-01	3,6E+00	8,0E-01	3,6E+00	0	2	8,0E-01	8,0E-01	0	2	8,0E-01	8,0E-01
F5	R9	2a	o	250	1	2	0	2	4,0E-01	8,0E-01	0,0E+00	8,0E-01	0	0	0,0E+00	<1	0	2	8,0E-01	8,0E-01
F6	R10	2a	o	250	4	4	4	4	1,6E+00	1,6E+00	1,6E+00	1,6E+00	0	2	8,0E-01	8,0E-01	0	3	1,2E+00	1,2E+00
F7	R11	2a	o	250	2	2	2	2	8,0E-01	8,0E-01	8,0E-01	8,0E-01	0	0	0,0E+00	<1	0	1	4,0E-01	4,0E-01
F8	R12	2a	o	250	6	7	6	7	2,4E+00	2,8E+00	2,4E+00	2,8E+00	0	3	1,2E+00	1,2E+00	1	1	8,0E-01	4,0E-01
J5	R13	2a	o	250	20	17	20	17	8,0E+00	6,8E+00	8,0E+00	6,8E+00	0	14	5,6E+00	5,6E+00	0	10	4,0E+00	4,0E+00
J6	R14	2a	o	250	48	47	48	47	1,9E+01	1,9E+01	1,9E+01	1,9E+01	0	50	2,0E+01	2,0E+01	0	38	1,5E+01	1,5E+01
P1	R15	2a	o	250	60	78	60	78	2,4E+01	3,1E+01	2,4E+01	3,1E+01	0	31	1,2E+01	1,2E+01	0	29	1,2E+01	1,2E+01
P2	R16	2a	o	250	144	126	144	126	5,8E+01	5,0E+01	5,8E+01	5,0E+01	0	79	3,2E+01	3,2E+01	0	91	3,6E+01	3,6E+01
P3	R17	2a	o	250	9	17	9	17	3,6E+00	6,8E+00	3,6E+00	6,8E+00	0	11	4,4E+00	4,4E+00	0	8	3,2E+00	3,2E+00
P5	R18	2a	o	250	46	33	46	33	1,8E+01	1,3E+01	1,8E+01	1,3E+01	4	18	8,8E+00	7,2E+00	1	24	1,0E+01	9,6E+00
P6	R19	2a	o	250	94	83	94	83	3,8E+01	3,3E+01	3,8E+01	3,3E+01	3	42	1,8E+01	1,7E+01	2	42	1,8E+01	1,7E+01
P7	R20	2a	o	250	3	4	3	4	1,2E+00	1,6E+00	1,2E+00	1,6E+00	0	1	4,0E-01	4,0E-01	0	4	1,6E+00	1,6E+00
P8	R21	2a	o	250	8	10	8	10	3,2E+00	4,0E+00	3,2E+00	4,0E+00	0	4	1,6E+00	1,6E+00	1	1	8,0E-01	4,0E-01
Q1	R22	2a	o	250	0	0	0	0	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0	1	4,0E-01	4,0E-01	0	0	0,0E+00	0,0E+00
Q2	R23	2a	o	250	0	0	0	0	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0	0	0,0E+00	0,0E+00	0	0	0,0E+00	0,0E+00
Q3	R24	2a	o	250	0	0	1	0	0,0E+00	0,0E+00	4,0E-01	0,0E+00	0	1	4,0E-01	4,0E-01	0	0	0,0E+00	0,0E+00
T3	R25	2a	o	250	0	0	0	0	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0	0	0,0E+00	0,0E+00	0	0	0,0E+00	0,0E+00
T14	R26	2a	o	250	30	43	30	43	1,2E+01	1,7E+01	1,2E+01	1,7E+01	0	25	1,0E+01	1,0E+01	0	22	8,8E+00	8,8E+00
T15	R27	2a	o	250	75	97	75	97	3,0E+01	3,9E+01	3,0E+01	3,9E+01	0	40	1,6E+01	1,6E+01	0	43	1,7E+01	1,7E+01
T16	R28	2a	o	250	8	2	8	2	3,2E+00	8,0E-01	3,2E+00	8,0E-01	0	2	8,0E-01	8,0E-01	0	4	1,6E+00	1,6E+00
T17	R29	2a	o	250	7	7	7	7	2,8E+00	2,8E+00	2,8E+00	2,8E+00	0	8	3,2E+00	3,2E+00	0	0	0,0E+00	0,0E+00
U5	R30	2a	o	250	125	110	125	110	5,0E+01	4,4E+01	5,0E+01	4,4E+01	0	69	2,8E+01	2,8E+01	0	77	3,1E+01	3,1E+01
U6	R31	2a	o	250	134	115	134	115	5,4E+01	4,6E+01	5,4E+01	4,6E+01	0	77	3,1E+01	3,1E+01	0	58	2,3E+01	2,3E+01
U7	R32	2a	o	250	151	178	151	178	6,0E+01	7,1E+01	6,0E+01	7,1E+01	0	90	3,6E+01	3,6E+01	0	122	4,9E+01	4,9E+01
U8	R33	2a	o	250	178	169	178	169	7,1E+01	6,8E+01	7,1E+01	6,8E+01	0	95	3,8E+01	3,8E+01	0	76	3,0E+01	3,0E+01
V5	R34	2a	o	250	6	2	6	2	2,4E+00	8,0E-01	2,4E+00	8,0E-01	0	7	2,8E+00	2,8E+00	0	5	2,0E+00	2,0E+00
V6	R35	2a	o	250	6	11	6	11	2,4E+00	4,4E+00	2,4E+00	4,4E+00	0	3	1,2E+00	1,2E+00	0	7	2,8E+00	2,8E+00
V7	R36	2a	o	250	11	16	11	16	4,4E+00	6,4E+00	4,4E+00	6,4E+00	0	9	3,6E+00	3,6E+00	0	10	4,0E+00	4,0E+00
V8	R37	2a	o	250	11	8	11	8	4,4E+00	3,2E+00	4,4E+00	3,2E+00	0	7	2,8E+00	2,8E+00	0	11	4,4E+00	4,4E+00
V9	R38	2a	o	250	13	10	13	10	5,2E+00	4,0E+00	5,2E+00	4,0E+00	0	19	7,6E+00	7,6E+00	0	22	8,8E+00	8,8E+00
V10	R39	2a	o	250	17	9	17	9	6,8E+00	3,6E+00	6,8E+00	3,6E+00	0	12	4,8E+00	4,8E+00	0	8	3,2E+00	3,2E+00
W7	R40	2a	o	250	38	18	38	18	1,5E+01	7,2E+00	1,5E+01	7,2E+00	0	17	6,8E+00	6,8E+00	0	20	8,0E+00	8,0E+00
W8	R41	2a	o	250	65	56	65	56	2,6E+01	2,2E+01	2,6E+01	2,2E+01	0	27	1,1E+01	1,1E+01	0	31	1,2E+01	1,2E+01
W9	R42	2a	o	250	90	89	90	89	3,6E+01	3,6E+01	3,6E+01	3,6E+01	0	58	2,3E+01	2,3E+01	0	69	2,8E+01	2,8E+01
W10	R43	2a	o	250	20	25	20	25	8,0E+00	1,0E+01	8,0E+00	1,0E+01	0	12	4,8E+00	4,8E+00	0	10	4,0E+00	4,0E+00
W11	R44	2a	o	250	46	51	46	51	1,8E+01	2,0E+01	1,8E+01	2,0E+01	0	21	8,4E+00	8,4E+00	0	29	1,2E+01	1,2E+01
W12	R45	2a	o	250	90	64	90	64	3,6E+01	2,6E+01	3,6E+01	2,6E+01	0	32	1,3E+01	1,3E+01	0	41	1,6E+01	1,6E+01
W13	R46	2a	o	250	18	17	18	17	7,2E+00	6,8E+00	7,2E+00	6,8E+00	0	7	2,8E+00	2,8E+00	0	3	1,2E+00	1,2E+00
W14	R47	2a	o	250	32	22	32	22	1,3E+01	8,8E+00	1,3E+01	8,8E+00	0	10	4,0E+00	4,0E+00	0	10	4,0E+00	4,0E+00
W15	R48	2a	o	250	57	40	57	40	2,3E+01	1,6E+01	2,3E+01	1,6E+01	0	25	1,0E+01	1,0E+01	0	17	6,8E+00	6,8E+00

Spring water

Code	Echantillon d'eau	Cat	CA	Quantité filtrée (mL)	NF EN ISO 9308-1									Méthode COMPASS® cc Agar							
					Colonies typiques sur gélose TTC (24 et 48 h 36°C)				Incubation à 44°C (24h)	Résultat (UFC /100 mL)				Réplicat 1				Réplicat 2			
					Coliformes totaux (lac+, ox -)		***E. coli*** (lac+, ox-, indole +)			**Coliformes totaux**		***E. coli***		Colonies caractéristiques		Résultat (UFC /100 mL)		Colonies caractéristiques		Résultat (UFC /100 mL)	
					Réplicat 1	Réplicat 2	Réplicat 1	Réplicat 2		Réplicat 1	Réplicat 2	Réplicat 1	Réplicat 2	Colonies bgal+/ GUD-	Colonies bgal+/ GUD+	**CT** (100 mL)	***E. coli*** (100 mL)	Colonies bgal+/ GUD-	Colonies bgal+/ GUD+	**CT** (100 mL)	***E. coli*** (100 mL)
B1	Source, Bruille St Amand	2a	n	100	6	6	0	1		6,0E+00	6,0E+00	<1	1,0E+00	5	2	7,0E+00	2,0E+00	5	2	7,0E+00	2,0E+00
E11	Forage, Liévin	2a	o	100	0	0	0	0		<1	<1	<1	<1	0	0	<1	<1	0	0	<1	<1
E12	Forage, Avion	2a	o	100	1	1	1	1		1,0E+00	1,0E+00	1,0E+00	1,0E+00	0	1	1,0E+00	1,0E+00	0	0	<1	<1
E13	Forage, Mons	2a	o	100	0	0	0	0	-	<1	<1	<1	<1	0	1	1,0E+00	1,0E+00	0	0	<1	<1
E14	Forage, Oisy	2a	o	100	0	0	0	0	-	<1	<1	<1	<1	0	0	<1	<1	0	0	<1	<1
E15	Forage, Douai	2a	o	100	0	0	0	0	-	<1	<1	<1	<1	0	0	<1	<1	0	1	1,0E+00	1,0E+00
E16	Forage, Boussois	2a	o	100	0	0	0	0	-	<1	<1	<1	<1	0	1	1,0E+00	1,0E+00	0	0	<1	<1
E17	Forage, Arras	2a	o	100	3	0	3	0	-	3,0E+00	0,0E+00	3,0E+00	0,0E+00	1	0	1,0E+00	<1	0	1	1,0E+00	1,0E+00
E18	Forage, Lomme	2a	o	100	2	3	2	3	-	2,0E+00	3,0E+00	2,0E+00	3,0E+00	0	1	1,0E+00	1,0E+00	0	2	2,0E+00	2,0E+00
F1	Forage, Jenlain	2a	o	100	0	0	0	0	-	<1	<1	<1	<1	0	0	<1	<1	0	1	1,0E+00	1,0E+00
F2	Forage, Ferrière	2a	o	100	2	1	2	1	-	2,0E+00	1,0E+00	2,0E+00	1,0E+00	3	1	4,0E+00	1,0E+00	4	0	4,0E+00	<1
F3	Forage, Trelon	2a	o	100	3	1	3	1	-	3,0E+00	1,0E+00	3,0E+00	1,0E+00	0	2	2,0E+00	2,0E+00	1	4	5,0E+00	4,0E+00
F4	Forage, Baives	2a	o	100	inc	inc	inc	inc	-	>100	>100	>100	>100	inc	inc	inc	inc	inc	inc	inc	inc
H1	Forage, Verchain	2a	o	100	6	6	6	6	-	6,0E+00	6,0E+00	6,0E+00	6,0E+00	0	1	1,0E+00	1,0E+00	0	3	3,0E+00	3,0E+00
H2	Forage, Liévin	2a	o	100	12	15	12	15	-	1,2E+01	1,5E+01	1,2E+01	1,5E+01	0	13	1,3E+01	1,3E+01	0	9	9,0E+00	9,0E+00
H3	Forage, Solimetz	2a	o	100	46	50	46	50	-	<1	5,0E+01	<1	5,0E+01	0	53	5,3E+01	5,3E+01	0	42	4,2E+01	4,2E+01
H4	Forage, Auxil	2a	o	100	88	89	88	89	-	8,8E+01	8,9E+01	8,8E+01	8,9E+01	0	94	9,4E+01	9,4E+01	0	81	8,1E+01	8,1E+01
H5	Forage, Mons	2a	o	100	12	10	12	10	-	1,2E+01	1,0E+01	1,2E+01	1,0E+01	0	6	6,0E+00	6,0E+00	0	8	8,0E+00	8,0E+00
H6	Forage, Oisy	2a	o	100	0	0	0	0	-	<1	<1	<1	<1	0	0	<1	<1	0	0	<1	<1
H7	Forage, Avion	2a	o	100	47	39	47	38	-	4,7E+01	<1	4,7E+01	<1	0	40	4,0E+01	4,0E+01	0	35	3,5E+01	3,5E+01
H8	Forage, Arras	2a	o	100	84	80	84	80	-	<1	<1	<1	<1	3	84	8,7E+01	8,4E+01	1	76	7,7E+01	7,6E+01
H9	Eau brute, Quiery	2a	o	100	14	10	14	10	-	1,4E+01	1,0E+01	1,4E+01	1,0E+01	0	6	6,0E+00	6,0E+00	0	5	5,0E+00	5,0E+00
H10	Eau brute, Auxi	2a	o	100	26	25	26	25	-	2,6E+01	2,5E+01	2,6E+01	2,5E+01	0	18	1,8E+01	1,8E+01	0	13	1,3E+01	1,3E+01
H11	Forage, Courières	2a	o	100	0	0	0	0	-	<1	<1	<1	<1	0	0	<1	<1	0	0	<1	<1
H12	Forage, Rollancourt	2a	o	100	0	0	0	0	-	<1	<1	<1	<1	0	0	<1	<1	0	0	<1	<1
H13	Forage, Lanorelies	2a	o	100	10	7	10	7	-	1,0E+01	7,0E+00	1,0E+01	7,0E+00	0	5	5,0E+00	5,0E+00	0	2	2,0E+00	2,0E+00
H14	Forage, Le Quesnoy	2a	o	100	20	13	20	13	-	2,0E+01	1,3E+01	2,0E+01	1,3E+01	0	6	6,0E+00	6,0E+00	0	4	4,0E+00	4,0E+00
H15	Forage, Marbaix	2a	o	100	40	36	40	36	-	4,0E+01	3,6E+01	4,0E+01	3,6E+01	0	41	4,1E+01	4,1E+01	0	31	3,1E+01	3,1E+01
H16	Forage, Saint Aubin	2a	o	100	80	69	80	69	-	8,0E+01	6,9E+01	8,0E+01	6,9E+01	0	101	1,0E+02	1,0E+02	0	76	7,6E+01	7,6E+01
J1	Forage, Penin	2a	o	100	25	32	25	32	-	2,5E+01	3,2E+01	2,5E+01	3,2E+01	0	19	1,9E+01	1,9E+01	0	22	2,2E+01	2,2E+01
J2	Forage, Liévin	2a	o	100	51	46	51	46	-	5,1E+01	4,6E+01	5,1E+01	4,6E+01	0	50	5,0E+01	5,0E+01	0	40	4,0E+01	4,0E+01
J3	Forage, Arras	2a	o	100	11	8	11	8	-	1,1E+01	8,0E+00	1,1E+01	8,0E+00	0	12	1,2E+01	1,2E+01	0	11	1,1E+01	1,1E+01
J4	Forage, Avion	2a	o	100	17	12	17	11	-	1,7E+01	1,2E+01	1,7E+01	1,1E+01	0	20	2,0E+01	2,0E+01	0	19	1,9E+01	1,9E+01
M8	Source, Bruille St Amand	2a	o	100	11	7	7	5	-	1,1E+01	7,0E+00	7,0E+00	5,0E+00	5	6	1,1E+01	6,0E+00	4	5	9,0E+00	5,0E+00
N2	Forage, Arras	2a	o	100	13	6	12	6	-	1,3E+01	6,0E+00	1,2E+01	6,0E+00	23	2	2,5E+01	2,0E+00	20	1	2,1E+01	1,0E+00
N3	Eau brute, Avion	2a	o	100	14	7	12	6	-	1,4E+01	7,0E+00	1,2E+01	6,0E+00	27	4	3,1E+01	4,0E+00	23	1	2,4E+01	1,0E+00
N8	Forage, Penin	2a	o	100	0	20	0	20	-	<1	2,0E+01	<1	2,0E+01	8	9	1,7E+01	9,0E+00	4	8	1,2E+01	8,0E+00
N9	Eau brute, Liévin	2a	o	100	0	0	0	0	-	<1	<1	<1	<1	6	16	2,2E+01	1,6E+01	5	9	1,4E+01	9,0E+00
N13	Forage, Metz	2a	o	100	0	0	0	0	1	<1	<1	<1	<1	0	0	<1	<1	0	0	<1	<1
N14	Forage, Ecoust	2a	o	100	0	0	0	0	0	<1	<1	<1	<1	0	0	<1	<1	0	0	<1	<1
N17	Forage, Billy	2a	o	100	6	9	0	0	2	6,0E+00	9,0E+00	<1	<1	3	0	3,0E+00	<1	8	0	8,0E+00	<1
N18	Eau brute, Violagnes	2a	o	100	7	9	0	0	3	7,0E+00	9,0E+00	<1	<1	8	2	1,0E+01	2,0E+00	8	0	8,0E+00	<1
N24	Eau brute, Preures	2a	o	100	0	0	0	0	-	<1	<1	<1	<1	0	0	<1	<1	0	0	<1	<1
O2	Eau brute, Planques	2a	o	100	10	10	5	5	7	1,0E+01	1,0E+01	5,0E+00	5,0E+00	0	3	3,0E+00	3,0E+00	0	3	3,0E+00	3,0E+00
O3	Eau brute, Fléchin	2a	o	100	15	18	7	9	4	1,5E+01	1,8E+01	7,0E+00	9,0E+00	0	2	2,0E+00	2,0E+00	0	3	3,0E+00	3,0E+00
O5	Eau brute, Camblain	2a	o	100	inc	inc	inc	inc	6	inc	inc	inc	inc	inc	6	inc	6,0E+00	inc	8	6,0E+00	8,0E+00
O6	Eau brute, Arras	2a	o	100	inc	inc	inc	inc	4	inc	inc	inc	inc	inc	2	inc	2,0E+00	inc	2	2,0E+00	2,0E+00
R2	Forage, Fremicourt	2a	o	100	1	4	0	0	-	1,0E+00	4,0E+00	<1	<1	1	0	1,0E+00	<1	3	0	3,0E+00	<1
R3	Forage, Noyelles	2a	o	100	3	1	0	0	-	3,0E+00	1,0E+00	<1	<1	4	0	4,0E+00	<1	5	0	5,0E+00	<1
R5	Forage, Fruges	2a	o	100	3	1	0	0	-	3,0E+00	1,0E+00	<1	<1	0	0	<1	<1	0	0	<1	<1
R6	Forage, Agny	2a	o	100	3	3	0	0	-	3,0E+00	3,0E+00	<1	<1	0	0	<1	<1	0	0	<1	<1
S2	Forage, Hulluch	2a	o	100	0	0	0	0	-	<1	<1	<1	<1	0	0	<1	<1	0	0	<1	<1
S3	Forage, Houdain	2a	o	100	0	0	0	0	-	<1	<1	<1	<1	1	0	1,0E+00	<1	0	0	<1	<1
S8	Forage, Vendin	2a	o	100	13	11	7	8	-	1,3E+01	1,1E+01	7,0E+00	8,0E+00	19	2	2,1E+01	2,0E+00	15	4	1,9E+01	4,0E+00
S9	Forage, Mercatel	2a	o	100	19	18	15	16	-	1,9E+01	1,8E+01	1,5E+01	1,6E+01	17	19	3,6E+01	1,9E+01	33	15	4,8E+01	1,5E+01
S10	Forage, Wangles	2a	o	100	33	32	17	16	-	3,3E+01	3,2E+01	1,7E+01	1,6E+01	19	4	2,3E+01	4,0E+00	36	12	4,8E+01	1,2E+01
S11	Forage, Havrincourt	2a	o	100	31	27	16	14	-	3,1E+01	2,7E+01	1,6E+01	1,4E+01	17	8	2,5E+01	8,0E+00	17	12	2,9E+01	1,2E+01
T2	Forage, Brias	2a	o	100	0	1	0	1	-	<1	1,0E+00	<1	1,0E+00	0	1	1,0E+00	1,0E+00	0	0	<1	<1
T12	Forage, Warlencourt	2a	o	100	28	20	28	20	-	2,8E+01	2,0E+01	2,8E+01	2,0E+01	0	10	1,0E+01	1,0E+01	0	19	1,9E+01	1,9E+01
T13	Forage, St Michel	2a	o	100	20	30	20	30	-	2,0E+01	3,0E+01	2,0E+01	3,0E+01	0	16	1,6E+01	1,6E+01	0	18	1,8E+01	1,8E+01
U3	Forage, Solesmes	2a	o	100	11	11	8	6	10	1,1E+01	1,1E+01	8,0E+00	6,0E+00	23	7	3,0E+01	7,0E+00	12	5	1,7E+01	5,0E+00
U4	Forage, Saulzoir	2a	o	100	28	26	25	24	26	2,8E+01	2,6E+01	2,5E+01	2,4E+01	28	6	3,4E+01	6,0E+00	30	20	5,0E+01	2,0E+01
U9	Forage, Maulde	2a	o	100	21	16	21	16	-	2,1E+01	1,6E+01	2,1E+01	1,6E+01	0	10	1,0E+01	1,0E+01	0	10	1,0E+01	1,0E+01
U10	Forage, Balhant	2a	o	100	26	23	26	23	-	2,6E+01	2,3E+01	2,6E+01	2,3E+01	0	8	8,0E+00	8,0E+00	0	6	6,0E+00	6,0E+00
U11	Forage, Escaudain	2a	o	100	17	21	17	21	-	1,7E+01	2,1E+01	1,7E+01	2,1E+01	0	15	1,5E+01	1,5E+01	0	18	1,8E+01	1,8E+01
U12	Forage, Wallers	2a	o	100	35	37	35	37	-	3,5E+01	3,7E+01	3,5E+01	3,7E+01	0	15	1,5E+01	1,5E+01	0	21	2,1E+01	2,1E+01
V1	Forage, Saint Pol	2a	o	100	>100	>100	7	7	2	>100	>100	7,0E+00	7,0E+00	>100	8	>100	8,0E+00	>100	10	8,0E+00	1,0E+01
V2	Forage, Douvrin	2a	o	100	>100	>100	8	10	4	>100	>100	8,0E+00	1,0E+01	>100	16	>100	1,6E+01	>100	14	1,6E+01	1,4E+01
V3	Forage, Rollancourt	2a	o	100	>100	>100	12	12	7	>100	>100	1,2E+01	1,2E+01	>100	25	>100	2,5E+01	>100	14	2,5E+01	1,4E+01
V4	Forage, Arras	2a	o	100	>100	>100	13	15	9	>100	>100	1,3E+01	1,5E+01	>100	22	>100	2,2E+01	>100	15	2,2E+01	1,5E+01
W1	Forage, Bucquoy	2a	o	100	>100	>100	12	8	6	>100	>100	1,2E+01	8,0E+00	>100	12	>100	1,2E+01	>100	14	1,2E+01	1,4E+01
W2	Forage, Teneur	2a	o	100	>100	>100	16	11	3	>100	>100	1,6E+01	1,1E+01	>100	22	>100	2,2E+01	>100	26	2,2E+01	2,6E+01
X9	Forage, Estrees	2a	o	100	9	14	1	1	-	9,0E+00	1,4E+01	1,0E+00	1,0E+00	9	0	9,0E+00	<1	5	0	5,0E+00	<1
X10	Forage, Arras	2a	o	100	18	19	0	0	-	1,8E+01	1,9E+01	<1	<1	8	1	9,0E+00	1,0E+00	10	0	1,0E+01	<1
X11	Source, Saint Martin d'Ablois	2a	o	100	2	1	0	0	-	2,0E+00	1,0E+00	<1	<1	1	0	1,0E+00	<1	1	0	1,0E+00	<1

Appendix B3

RELATIVE ACCURACY - STATISTICAL CALCULATIONS

Relative accuracy - Escherichia coli - Water for human consumption - Raw data

Type	N° échantillon	Méthode de référence					Méthode alternative					Différence
		Echantillon	Répétition 1	Répétition 2	M	SD	Echantillon	Répétition 1	Répétition 2	M	SD	
Eaux de réseau	M5	1	17	15	16,0	1,4	1	9	8	8,5	0,7	-7,5
	S5	2	24	13	18,5	7,8	2	10	6	8,0	2,8	-10,5
	S6	3	23	20	21,5	2,1	3	19	14	16,5	3,5	-5,0
	S7	4	28	16	22,0	8,5	4	12	16	14,0	2,8	-8,0
	T1	5	17	21	19,0	2,8	5	19	27	23,0	5,7	4,0
	U1	6	17	18	17,5	0,7	6	7	12	9,5	3,5	-8,0
	U2	7	24	27	25,5	2,1	7	19	22	20,5	2,1	-5,0
	U18	8	76	74	75,0	1,4	8	44	75	59,5	21,9	-15,5
	U19	9	25	25	25,0	0,0	9	47	50	48,5	2,1	23,5
	W3	10	24	11	17,5	9,2	10	21	19	20,0	1,4	2,5
	W4	11	22	13	17,5	6,4	11	26	22	24,0	2,8	6,5
	W5	12	18	21	19,5	2,1	12	14	11	12,5	2,1	-7,0
	W6	13	22	24	23,0	1,4	13	28	41	34,5	9,2	11,5
Eaux embouteillées	J5	14	20	17	18,5	2,1	14	14	10	12,0	2,8	-6,5
	J6	15	48	47	47,5	0,7	15	50	38	44,0	8,5	-3,5
	P1	16	60	78	69,0	12,7	16	31	29	30,0	1,4	-39,0
	P5	17	46	33	39,5	9,2	17	18	24	21,0	4,2	-18,5
	W7	18	38	18	28,0	14,1	18	17	20	18,5	2,1	-9,5
	W8	19	65	56	60,5	6,4	19	27	31	29,0	2,8	-31,5
	W10	20	20	25	22,5	3,5	20	12	10	11,0	1,4	-11,5
	W11	21	46	51	48,5	3,5	21	21	29	25,0	5,7	-23,5
	W14	22	32	22	27,0	7,1	22	10	10	10,0	0,0	-17,0
	W15	23	57	40	48,5	12,0	23	25	17	21,0	5,7	-27,5
Eaux de source	M8	24	7	5	6,0	1,4	24	6	5	5,5	0,7	-0,5
	S9	25	15	16	15,5	0,7	25	19	15	17,0	2,8	1,5
	S10	26	17	16	16,5	0,7	26	4	12	8,0	5,7	-8,5
	S11	27	16	14	15,0	1,4	27	8	12	10,0	2,8	-5,0
	T12	28	28	20	24,0	5,7	28	10	19	14,5	6,4	-9,5
	T13	29	20	30	25,0	7,1	29	16	18	17,0	1,4	-8,0
	U3	30	8	6	7,0	1,4	30	7	5	6,0	1,4	-1,0
	U4	31	25	24	24,5	0,7	31	6	20	13,0	9,9	-11,5
	V1	32	7	7	7,0	0,0	32	8	10	9,0	1,4	2,0
	V2	33	8	10	9,0	1,4	33	16	14	15,0	1,4	6,0
	V3	34	12	12	12,0	0,0	34	25	14	19,5	7,8	7,5
	V4	35	13	15	14,0	1,4	35	22	15	18,5	4,9	4,5
	W1	36	12	8	10,0	2,8	36	12	14	13,0	1,4	3,0
	W2	37	16	11	13,5	3,5	37	22	26	24,0	2,8	10,5

q=	37	**Mx=**	25,0		**My=**	19,2		**M=**	-5,8
n=	2	**MEDx=**	19,5		**MEDy=**	17,0		**MED=**	-6,5
N=qn=	74	**SDbx=**	16,8		**SDby=**	11,9			Biais
		MEDwx =		2,1		**MEDwy =**	2,8		
		SDwx=		5,5		**SDwy=**	5,5		
		rob. SDwx=		3,1		**rob. SDwy=**	4,2		

Choix de la méthode
GMFR

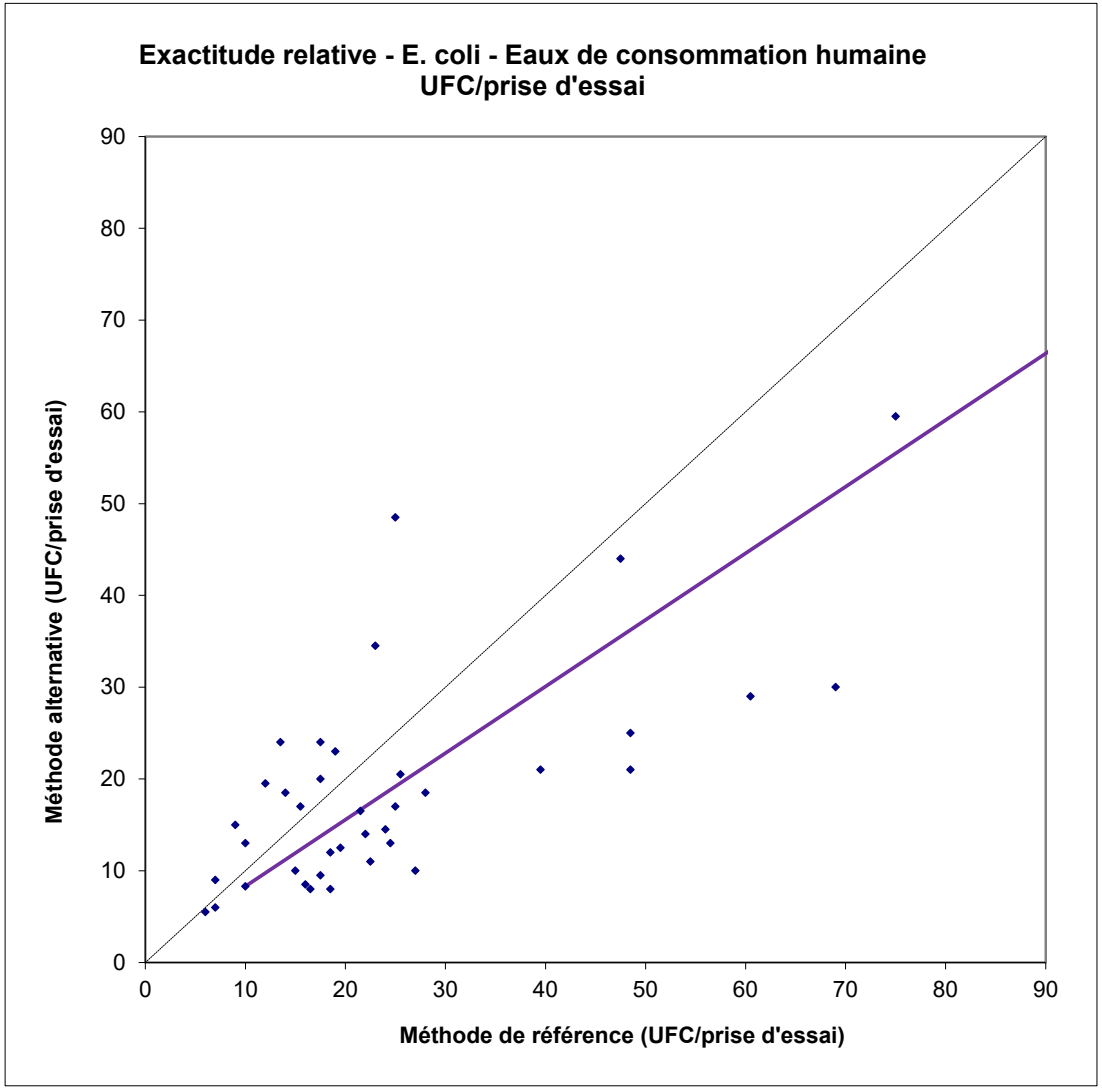
		R=	1,009		
		rob. R=	1,333		
				Sx=	17,117
				Sy=	12,423
r=	0,678				
b=	0,73			**Res. SEM=**	9,783
a=	1,04			**Res. SD=**	13,835

S(b)=	0,095	**p(t;b=1)=**	0,005	**t(b)=**	2,879
S(a)=	2,563	**p(t;a=0)=**	0,686	**t(a)=**	0,405

Répétabilité	Méthode de référence	Méthode alternative
r	15,3	15,5
rob. r	8,8	11,7

Est. y	Dév.
12,7	-4,2
14,5	-6,5
16,6	-0,1
17,0	-3,0
14,8	8,2
13,7	-4,2
19,5	1,0
55,5	4,0
19,2	29,3
13,7	6,3
13,7	10,3
15,2	-2,7
17,7	16,8
14,5	-2,5
35,5	8,5
51,1	-21,1
29,7	-8,7
21,4	-2,9
44,9	-15,9
17,4	-6,4
36,2	-11,2
20,6	-10,6
36,2	-15,2
5,4	0,1
12,3	4,7
13,0	-5,0
11,9	-1,9
18,5	-4,0
19,2	-2,2
6,1	-0,1
18,8	-5,8
6,1	2,9
7,6	7,4
9,7	9,8
11,2	7,3
8,3	4,7
10,8	13,2

Les points représentés correspondent aux moyennes des répétitions de chaque échantillon



Relative accuracy - Escherichia coli - Water for human consumption - Log data

Type	N° échantillon	Méthode de référence					Méthode alternative					Différence
		Echantillon	Répétition 1	Répétition 2	M	SD	Echantillon	Répétition 1	Répétition 2	M	SD	
Eaux de réseau	M5	1	1,230	1,176	1,203	0,038	1	0,954	0,903	0,929	0,036	-0,275
	S5	2	1,380	1,114	1,247	0,188	2	1,000	0,778	0,889	0,157	-0,358
	S6	3	1,362	1,301	1,331	0,043	3	1,279	1,146	1,212	0,094	-0,119
	S7	4	1,447	1,204	1,326	0,172	4	1,079	1,204	1,142	0,088	-0,184
	T1	5	1,230	1,322	1,276	0,065	5	1,279	1,431	1,355	0,108	0,079
	U1	6	1,230	1,255	1,243	0,018	6	0,845	1,079	0,962	0,166	-0,281
	U2	7	1,380	1,431	1,406	0,036	7	1,279	1,342	1,311	0,045	-0,095
	U18	8	1,881	1,869	1,875	0,008	8	1,643	1,875	1,759	0,164	-0,116
	U19	9	1,398	1,398	1,398	0,000	9	1,672	1,699	1,686	0,019	0,288
	W3	10	1,380	1,041	1,211	0,240	10	1,322	1,279	1,300	0,031	0,090
	W4	11	1,342	1,114	1,228	0,162	11	1,415	1,342	1,379	0,051	0,151
	W5	12	1,255	1,322	1,289	0,047	12	1,146	1,041	1,094	0,074	-0,195
	W6	13	1,342	1,380	1,361	0,027	13	1,447	1,613	1,530	0,117	0,169
Eaux embouteillées	J5	14	1,301	1,230	1,266	0,050	14	1,146	1,000	1,073	0,103	-0,193
	J6	15	1,681	1,672	1,677	0,006	15	1,699	1,580	1,639	0,084	-0,037
	P1	16	1,778	1,892	1,835	0,081	16	1,491	1,462	1,477	0,020	-0,358
	P5	17	1,663	1,519	1,591	0,102	17	1,255	1,380	1,318	0,088	-0,273
	W7	18	1,580	1,255	1,418	0,229	18	1,230	1,301	1,266	0,050	-0,152
	W8	19	1,813	1,748	1,781	0,046	19	1,431	1,491	1,461	0,042	-0,319
	W10	20	1,301	1,398	1,349	0,069	20	1,079	1,000	1,040	0,056	-0,310
	W11	21	1,663	1,708	1,685	0,032	21	1,322	1,462	1,392	0,099	-0,293
	W14	22	1,505	1,342	1,424	0,115	22	1,000	1,000	1,000	0,000	-0,424
	W15	23	1,756	1,602	1,679	0,109	23	1,398	1,230	1,314	0,118	-0,365
Eaux de source	M8	24	0,845	0,699	0,772	0,103	24	0,778	0,699	0,739	0,056	-0,033
	S9	25	1,176	1,204	1,190	0,020	25	1,279	1,176	1,227	0,073	0,037
	S10	26	1,230	1,204	1,217	0,019	26	0,602	1,079	0,841	0,337	-0,377
	S11	27	1,204	1,146	1,175	0,041	27	0,903	1,079	0,991	0,125	-0,184
	T12	28	1,447	1,301	1,374	0,103	28	1,000	1,279	1,139	0,197	-0,235
	T13	29	1,301	1,477	1,389	0,125	29	1,204	1,255	1,230	0,036	-0,159
	U3	30	0,903	0,778	0,841	0,088	30	0,845	0,699	0,772	0,103	-0,069
	U4	31	1,398	1,380	1,389	0,013	31	0,778	1,301	1,040	0,370	-0,349
	V1	32	0,845	0,845	0,845	0,000	32	0,903	1,000	0,952	0,069	0,106
	V2	33	0,903	1,000	0,952	0,069	33	1,204	1,146	1,175	0,041	0,224
	V3	34	1,079	1,079	1,079	0,000	34	1,398	1,146	1,272	0,178	0,193
	V4	35	1,114	1,176	1,145	0,044	35	1,342	1,176	1,259	0,118	0,114
	W1	36	1,079	0,903	0,991	0,125	36	1,079	1,146	1,113	0,047	0,122
	W2	37	1,204	1,041	1,1	0,1	37	1,342	1,415	1,379	0,051	0,256

q=	37	**Mx=**	1,313	**My=**	1,207	**M=**	-0,106
n=	2	**MEDx=**	1,289	**MEDy=**	1,227	**MED=**	-0,152
N=qn=	74	**SDbx=**	0,265	**SDby=**	0,246		Biais
		MEDwx =	0,050	**MEDwy =**	0,084		
		SDwx=	0,097	**SDwy=**	0,124		
		rob. SDwx=	0,074	**rob. SDwy=**	0,125		

Choix de la méthode

GMFR

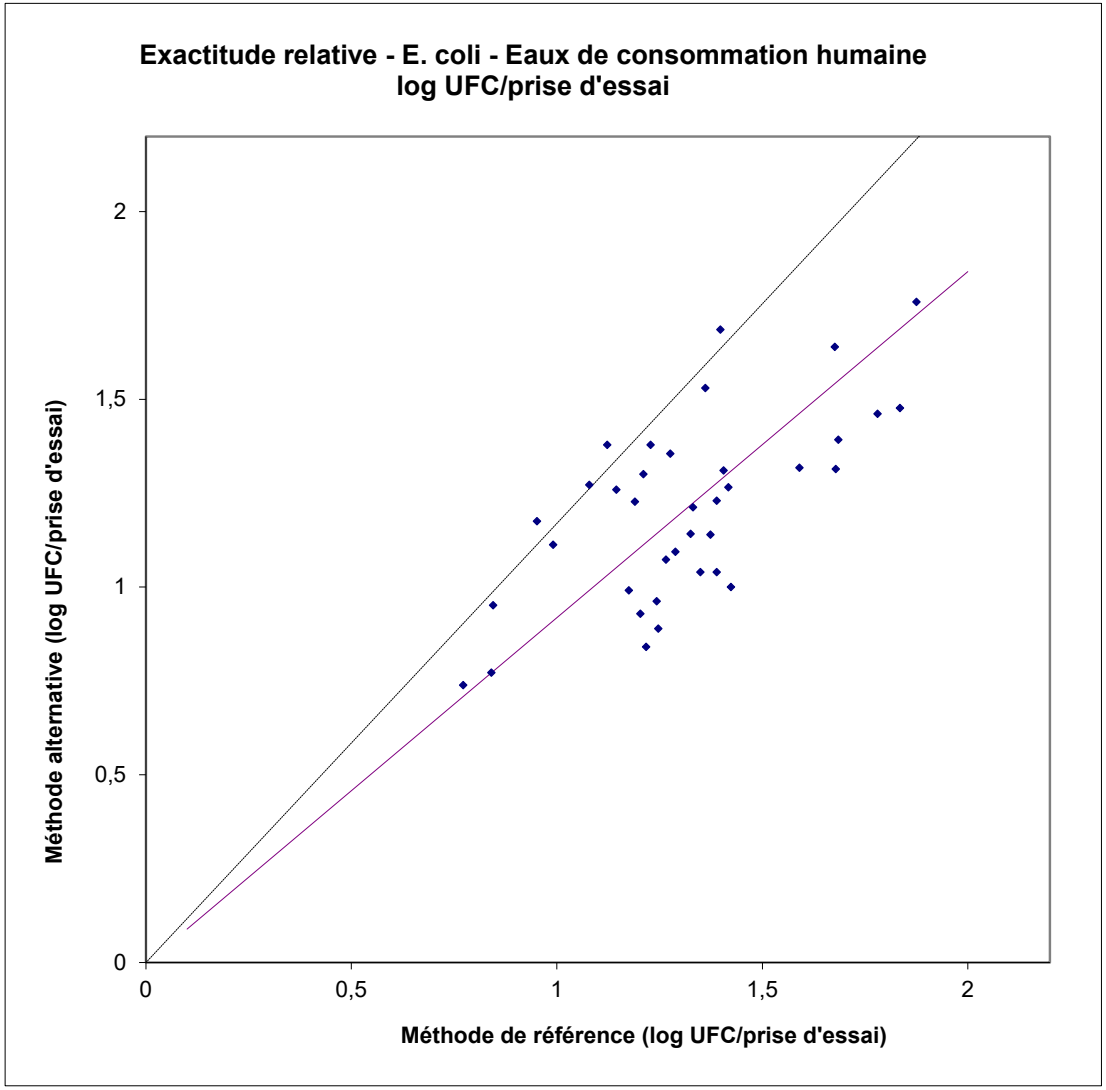
R=	1,283		
rob. R=	1,689		
		Sx=	0,278
		Sy=	0,256
r=	0,679		
b=	0,922	**Res. SEM=**	0,202
a=	-0,003	**Res. SD=**	0,286

S(b)=	0,121	**p(t;b=1)=**	0,519	**t(b)=**	0,647
S(a)=	0,362	**p(t;a=0)=**	0,993	**t(a)=**	0,008

Répétabilité	Méthode de référence	Méthode alternative
r	0,272	0,348
rob. r	0,207	0,350

Est. y	Dév.
1,106	-0,177
1,146	-0,257
1,224	-0,011
1,219	-0,077
1,173	0,182
1,142	-0,180
1,292	0,018
1,725	0,034
1,285	0,400
1,113	0,188
1,129	0,250
1,185	-0,091
1,251	0,279
1,163	-0,090
1,542	0,097
1,688	-0,211
1,463	-0,145
1,303	-0,038
1,638	-0,176
1,241	-0,201
1,550	-0,158
1,309	-0,309
1,544	-0,230
0,708	0,030
1,094	0,134
1,119	-0,278
1,080	-0,089
1,263	-0,124
1,277	-0,047
0,772	0,000
1,277	-0,237
0,776	0,176
0,874	0,301
0,991	0,281
1,052	0,207
0,910	0,202
1,032	0,347

Les points représentés correspondent aux moyennes des répétitions de chaque échantillon



Relative accuracy - Coliforms - Water for human consumption - Raw data

Type	N° échantillon	Méthode de référence					Méthode alternative					Différence
		Echantillon	Répétition 1	Répétition 2	M	SD	Echantillon	Répétition 1	Répétition 2	M	SD	
	M4	1	5	6	5,5	0,7	1	5	15	10,0	7,1	4,5
Eaux de réseau	M5	2	18	15	16,5	2,1	2	12	11	11,5	0,7	-5,0
	M7	3	6	5	5,5	0,7	3	7	4	5,5	2,1	0,0
	N1	4	9	10	9,5	0,7	4	28	24	26,0	2,8	16,5
	N4	5	57	58	57,5	0,7	5	38	33	35,5	3,5	-22,0
	N16	6	7	10	8,5	2,1	6	8	10	9,0	1,4	0,5
	O1	7	10	13	11,5	2,1	7	6	19	12,5	9,2	1,0
	S4	8	8	12	10,0	2,8	8	11	15	13,0	2,8	3,0
	S5	9	25	13	19,0	8,5	9	33	31	32,0	1,4	13,0
	S6	10	29	22	25,5	4,9	10	42	44	43,0	1,4	17,5
	S7	11	32	20	26,0	8,5	11	24	36	30,0	8,5	4,0
	T1	12	25	31	28,0	4,2	12	35	56	45,5	14,8	17,5
	U1	13	23	22	22,5	0,7	13	27	31	29,0	2,8	6,5
	U2	14	31	27	29,0	2,8	14	37	51	44,0	9,9	15,0
	U18	15	76	74	75,0	1,4	15	44	75	59,5	21,9	-15,5
Eaux embouteillées	X8	16	10	14	12,0	2,8	16	5	6	5,5	0,7	-6,5
	J5	17	20	17	18,5	2,1	17	14	10	12,0	2,8	-6,5
	J6	18	48	47	47,5	0,7	18	50	38	44,0	8,5	-3,5
	P1	19	60	78	69,0	12,7	19	31	29	30,0	1,4	-39,0
	P5	20	46	33	39,5	9,2	20	22	25	23,5	2,1	-16,0
	W7	21	38	18	28,0	14,1	21	17	20	18,5	2,1	-9,5
	W8	22	65	56	60,5	6,4	22	27	31	29,0	2,8	-31,5
	W10	23	20	25	22,5	3,5	23	12	10	11,0	1,4	-11,5
	W11	24	46	51	48,5	3,5	24	21	29	25,0	5,7	-23,5
	W14	25	32	22	27,0	7,1	25	10	10	10,0	0,0	-17,0
	W15	26	57	40	48,5	12,0	26	25	17	21,0	5,7	-27,5
Eaux de source	M8	27	11	7	9,0	2,8	27	11	9	10,0	1,4	1,0
	N2	28	13	6	9,5	4,9	28	25	21	23,0	2,8	13,5
	N3	29	14	7	10,5	4,9	29	31	24	27,5	4,9	17,0
	N18	30	7	9	8,0	1,4	30	10	8	9,0	1,4	1,0
	S8	31	13	11	12,0	1,4	31	21	19	20,0	1,4	8,0
	S9	32	19	18	18,5	0,7	32	36	48	42,0	8,5	23,5
	S10	33	33	32	32,5	0,7	33	23	48	35,5	17,7	3,0
	S11	34	31	27	29,0	2,8	34	25	29	27,0	2,8	-2,0
	T12	35	28	20	24,0	5,7	35	10	19	14,5	6,4	-9,5
	T13	36	20	30	25,0	7,1	36	16	18	17,0	1,4	-8,0
	U3	37	11	11	11,0	0,0	37	30	17	23,5	9,2	12,5
	U4	38	28	26	27,0	1,4	38	34	50	42,0	11,3	15,0
	X9	39	9	14	11,5	3,5	39	9	5	7,0	2,8	-4,5
	X10	40	18	19	18,5	0,7	40	9	10	9,5	0,7	-9,0

q=	40	**Mx=**	25,4		**My=**	23,6		**M=**	-1,9
n=	2	**MEDx=**	22,5		**MEDy=**	23,3		**MED=**	0,3
N=qn=	80	**SDbx=**	17,8		**SDby=**	13,5			Biais
			MEDwx =	2,8		**MEDwy =**	2,8		
			SDwx=	5,3		**SDwy=**	6,9		
			rob. SDwx=	4,2		**rob. SDwy=**	4,2		

Choix de la méthode

GMFR

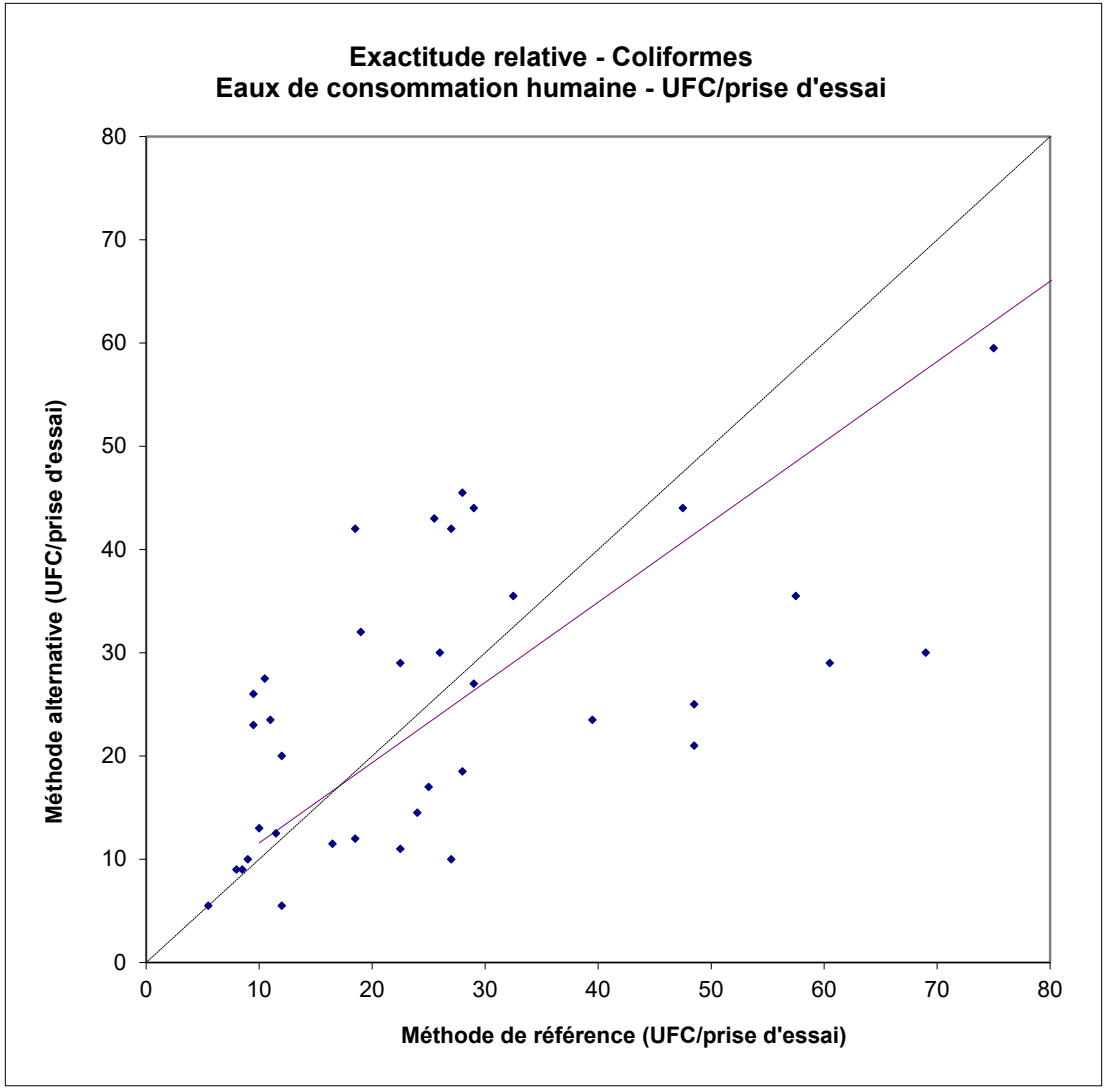
		R=	1,315		
		rob. R=	1,000		
				Sx=	18,271
				Sy=	14,199
r=	0,564				
b=	0,78			**Res. SEM=**	10,664
a=	3,82			**Res. SD=**	15,081

S(b)=	0,093	**p(t;b=1)=**	0,020	**t(b)=**	2,385
S(a)=	2,738	**p(t;a=0)=**	0,167	**t(a)=**	1,394

Répétabilité	Méthode de référence	Méthode alternative
r	14,7	19,4
rob. r	11,7	11,7

Est. y	Dév.
8,1	1,9
16,6	-5,1
8,1	-2,6
11,2	14,8
48,5	-13,0
10,4	-1,4
12,8	-0,3
11,6	1,4
18,6	13,4
23,6	19,4
24,0	6,0
25,6	19,9
21,3	7,7
26,4	17,6
62,1	-2,6
13,1	-7,6
18,2	-6,2
40,7	3,3
57,4	-27,4
34,5	-11,0
25,6	-7,1
50,8	-21,8
21,3	-10,3
41,5	-16,5
24,8	-14,8
41,5	-20,5
10,8	-0,8
11,2	11,8
12,0	15,5
10,0	-1,0
13,1	6,9
18,2	23,8
29,1	6,4
26,4	0,6
22,5	-8,0
23,2	-6,2
12,4	11,1
24,8	17,2
12,8	-5,8
18,2	-8,7

Les points représentés correspondent aux moyennes des répétitions de chaque échantillon



Relative accuracy - Coliforms - Water for human consumption - Log data

Type	N° échantillon	Méthode de référence					Méthode alternative					Différence
		Echantillon	Répétition 1	Répétition 2	M	SD	Echantillon	Répétition 1	Répétition 2	M	SD	
	M4	1	0,699	0,778	0,739	0,056	1	0,699	1,176	0,938	0,337	0,199
Eaux de réseau	M5	2	1,255	1,176	1,216	0,056	2	1,079	1,041	1,060	0,027	-0,155
	M7	3	0,778	0,699	0,739	0,056	3	0,845	0,602	0,724	0,172	-0,015
	N1	4	0,954	1,000	0,977	0,032	4	1,447	1,380	1,414	0,047	0,437
	N4	5	1,756	1,763	1,760	0,005	5	1,580	1,519	1,549	0,043	-0,211
	N16	6	0,845	1,000	0,923	0,110	6	0,903	1,000	0,952	0,069	0,029
	O1	7	1,000	1,114	1,057	0,081	7	0,778	1,279	1,028	0,354	-0,029
	S4	8	0,903	1,079	0,991	0,125	8	1,041	1,176	1,109	0,095	0,118
	S5	9	1,398	1,114	1,256	0,201	9	1,519	1,491	1,505	0,019	0,249
	S6	10	1,462	1,342	1,402	0,085	10	1,623	1,643	1,633	0,014	0,231
	S7	11	1,505	1,301	1,403	0,144	11	1,380	1,556	1,468	0,125	0,065
	T1	12	1,398	1,491	1,445	0,066	12	1,544	1,748	1,646	0,144	0,201
	U1	13	1,362	1,342	1,352	0,014	13	1,431	1,491	1,461	0,042	0,109
	U2	14	1,491	1,431	1,461	0,042	14	1,568	1,708	1,638	0,099	0,177
	U18	15	1,881	1,869	1,875	0,008	15	1,643	1,875	1,759	0,164	-0,116
Eaux embouteillées	X8	16	1,000	1,146	1,073	0,103	16	0,699	0,778	0,739	0,056	-0,335
	J5	17	1,301	1,230	1,266	0,050	17	1,146	1,000	1,073	0,103	-0,193
	J6	18	1,681	1,672	1,677	0,006	18	1,699	1,580	1,639	0,084	-0,037
	P1	19	1,778	1,892	1,835	0,081	19	1,491	1,462	1,477	0,020	-0,358
	P5	20	1,663	1,519	1,591	0,102	20	1,342	1,398	1,370	0,039	-0,220
	W7	21	1,580	1,255	1,418	0,229	21	1,230	1,301	1,266	0,050	-0,152
	W8	22	1,813	1,748	1,781	0,046	22	1,431	1,491	1,461	0,042	-0,319
	W10	23	1,301	1,398	1,349	0,069	23	1,079	1,000	1,040	0,056	-0,310
	W11	24	1,663	1,708	1,685	0,032	24	1,322	1,462	1,392	0,099	-0,293
	W14	25	1,505	1,342	1,424	0,115	25	1,000	1,000	1,000	0,000	-0,424
	W15	26	1,756	1,602	1,679	0,109	26	1,398	1,230	1,314	0,118	-0,365
Eaux de source	M8	27	1,041	0,845	0,943	0,139	27	1,041	0,954	0,998	0,062	0,055
	N2	28	1,114	0,778	0,946	0,237	28	1,398	1,322	1,360	0,054	0,414
	N3	29	1,146	0,845	0,996	0,213	29	1,491	1,380	1,436	0,079	0,440
	N18	30	0,845	0,954	0,900	0,077	30	1,000	0,903	0,952	0,069	0,052
	S8	31	1,114	1,041	1,078	0,051	31	1,322	1,279	1,300	0,031	0,223
	S9	32	1,279	1,255	1,267	0,017	32	1,556	1,681	1,619	0,088	0,352
	S10	33	1,519	1,505	1,512	0,009	33	1,362	1,681	1,521	0,226	0,010
	S11	34	1,491	1,431	1,461	0,042	34	1,398	1,462	1,430	0,046	-0,031
	T12	35	1,447	1,301	1,374	0,103	35	1,000	1,279	1,139	0,197	-0,235
	T13	36	1,301	1,477	1,389	0,125	36	1,204	1,255	1,230	0,036	-0,159
	U3	37	1,041	1,041	1,041	0,000	37	1,477	1,230	1,354	0,174	0,312
	U4	38	1,447	1,415	1,431	0,023	38	1,531	1,699	1,615	0,118	0,184
	X9	39	0,954	1,146	1,050	0,136	39	0,954	0,699	0,827	0,181	-0,224
	X10	40	1,255	1,279	1,267	0,017	40	0,954	1,000	0,977	0,032	-0,290

q=	40	**Mx=**	1,301		**My=**	1,285		**M=**	-0,015
n=	2	**MEDx=**	1,351		**MEDy=**	1,357		**MED=**	-0,022
N=qn=	80	**SDbx=**	0,302		**SDby=**	0,280			Biais
			MEDwx =	0,067		**MEDwy =**	0,069		
			SDwx=	0,101		**SDwy=**	0,124		
			rob. SDwx=	0,100		**rob. SDwy=**	0,102		

Choix de la méthode

GMFR

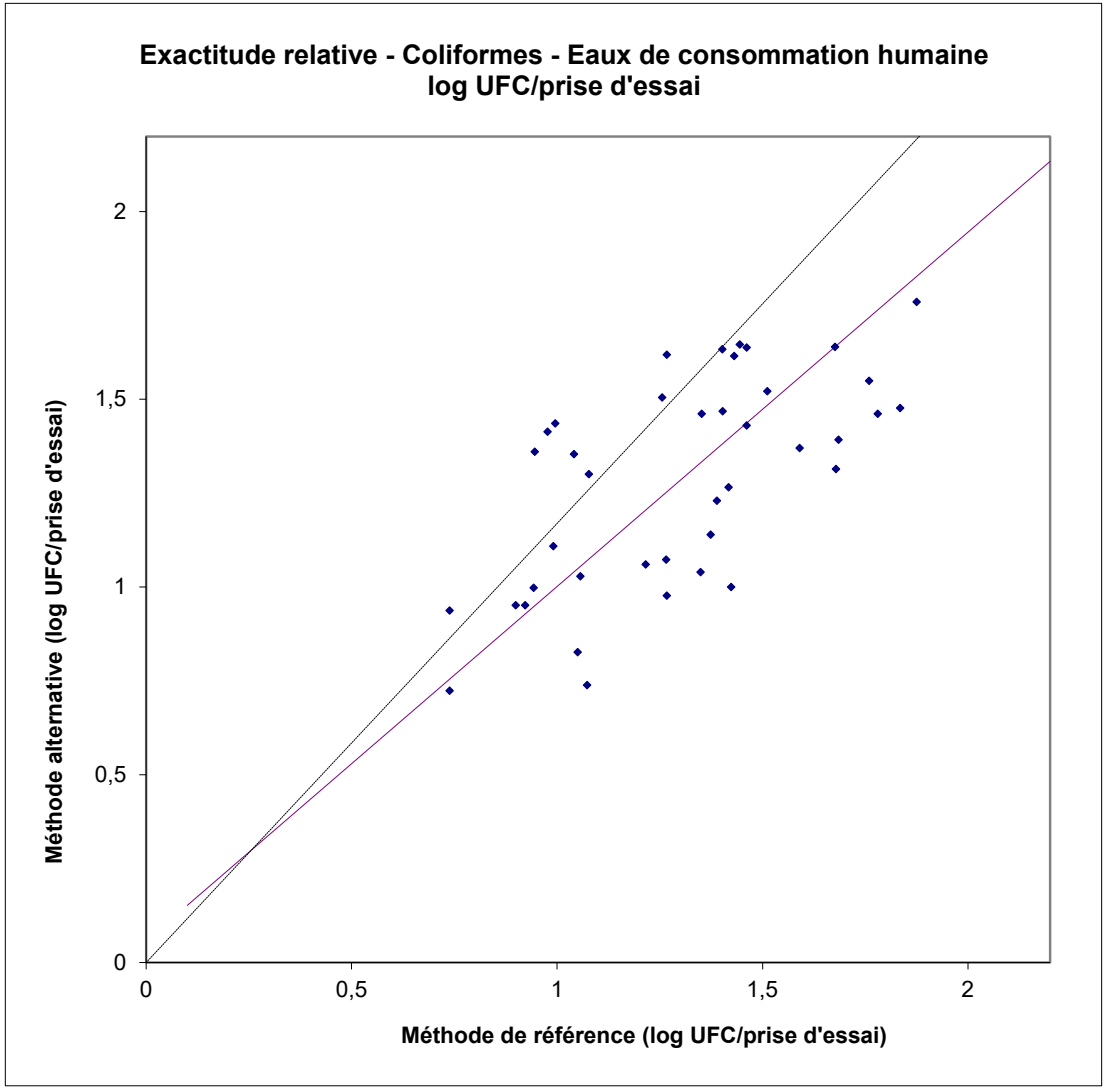
R=	1,221		
rob. R=	1,018		
		Sx=	0,309
		Sy=	0,291
r=	0,645		
b=	0,944	**Res. SEM=**	0,241
a=	0,058	**Res. SD=**	0,341

S(b)=	0,125	**p(t;b=1)=**	0,653	**t(b)=**	0,451
S(a)=	0,441	**p(t;a=0)=**	0,896	**t(a)=**	0,131

Répétabilité	Méthode de référence	Méthode alternative
r	0,284	0,347
rob. r	0,279	0,284

Est. y	Dév.
0,755	0,183
1,205	-0,145
0,755	-0,031
0,980	0,434
1,718	-0,169
0,929	0,023
1,055	-0,027
0,993	0,115
1,243	0,262
1,381	0,252
1,382	0,086
1,421	0,225
1,334	0,128
1,437	0,201
1,827	-0,068
1,071	-0,332
1,252	-0,179
1,640	-0,001
1,790	-0,313
1,559	-0,189
1,396	-0,130
1,738	-0,277
1,331	-0,292
1,648	-0,256
1,402	-0,402
1,642	-0,328
0,948	0,050
0,951	0,409
0,997	0,438
0,907	0,045
1,075	0,226
1,254	0,365
1,485	0,037
1,437	-0,007
1,355	-0,215
1,369	-0,139
1,041	0,313
1,408	0,207
1,049	-0,222
1,254	-0,276

Les points représentés correspondent aux moyennes des répétitions de chaque échantillon



Appendix C1

LINEARITY
-
RAW RESULTS

Linearity - Raw results

Catégorie	Taux visé (UFC/100 mL)*	Taux réel (UFC/100 mL)*	Cat	Volume filtré (mL)	NF EN ISO 9308-1				Méthode COMPASS® cc Agar			
					Colonies typiques		Résultat (UFC /100 mL)		Colonies typiques		Résultat (UFC /100 mL)	
					Réplicat 1	Réplicat 2	Réplicat 1	Réplicat 2	Réplicat 1	Réplicat 2	Réplicat 1	Réplicat 2
Eau de réseau contaminée par Escherichia coli (Ec3e)	5 à 10	6	1a	100	6	8	6,0E+00	8,0E+00	7	6	7,0E+00	6,0E+00
	20 à 50	22	1a	100	31	21	3,1E+01	2,1E+01	23	21	2,3E+01	2,1E+01
	50 à 100	55	1a	100	47	42	4,7E+01	4,2E+01	40	42	4,0E+01	4,2E+01
	~~100 à 150~~	~~110~~	~~1a~~	~~100~~	~~80~~	~~74~~	~~8,0E+01~~	~~7,4E+01~~	~~101~~	~~93~~	~~1,0E+02~~	~~9,3E+01~~
Eau minérale embouteillée contaminée par Escherichia coli (Ec2e)	5 à 10	5	2a	250	5	7	5,0E+00	7,0E+00	10	3	1,0E+01	3,0E+00
	20 à 50	21	2a	250	24	19	2,4E+01	1,9E+01	18	28	1,8E+01	2,8E+01
	50 à 100	51	2a	250	53	64	5,3E+01	6,4E+01	40	43	4,0E+01	4,3E+01
	~~100 à 150~~	~~103~~	~~2a~~	~~250~~	~~101~~	~~104~~	~~1,0E+02~~	~~1,0E+02~~	~~119~~	~~92~~	~~1,2E+02~~	~~9,2E+01~~
Eau de de source non embouteillée contaminée par Citrobacter youngae (Cit4e)	5 à 10	9	2a	100	11	8	1,1E+01	8,0E+00	6	2	6,0E+00	2,0E+00
	20 à 50	36	2a	100	32	28	3,2E+01	2,8E+01	26	19	2,6E+01	1,9E+01
	50 à 100	90	2a	100	60	74	6,0E+01	7,4E+01	37	40	3,7E+01	4,0E+01
	~~100 à 150~~	~~180~~	~~2a~~	~~100~~	~~155~~	~~152~~	~~1,6E+02~~	~~1,5E+02~~	~~104~~	~~78~~	~~1,0E+02~~	~~7,8E+01~~

Appendix C2

LINEARITY
-
STATISTICAL CALCULATIONS

Linearity - E. coli - Tap water - Raw data

Niveau
1
2
3

Méthode de référence			
Rep.1	Rep.2	M	SD
6	8	7,0	1,4
31	21	26,0	7,1
47	42	44,5	3,5

Méthode alternative			
Rep.1	Rep.2	M	SD
7	6	6,5	0,7
23	21	22,0	1,4
40	42	41,0	1,4

q = 3
n = 2
N = qn = 6

Mx = 25,8
MEDx = 26,0
SDbx = 18,8

MEDwx = 3,5
SDwx = 3,3
rob. SDwx = 5,2

My = 23,2
MEDy = 22,0
SDby = 17,3

MEDwy = 1,4
SDwy = 0,9
rob. SDwy = 2,1

Choix méthode

OLS2; x=alt

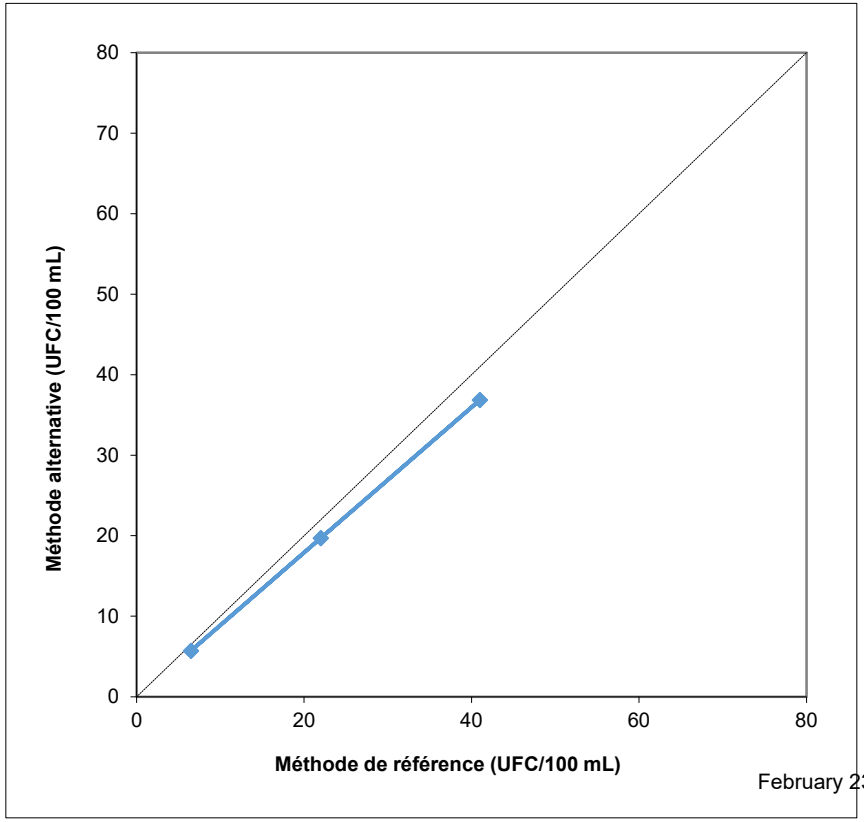
R = 0,264
rob.R = 0,400

r = 0,998
b = 0,903
a = -0,156

Sx = 17,151
Sy = 15,484

M(Alt.)	**Réf.**	**Est. y**	Déviation
6,5	6,0	5,7	0,3
22,0	31,0	19,7	11,3
41,0	47,0	36,9	10,1
6,5	8,0	5,7	2,3
22,0	21,0	19,7	1,3
41,0	42,0	36,9	5,1

Res.SD = 8,1



Sb = 0,212
Sa = 6,397

p(t;b=1) = 0,670
p(t;a=0) = 0,982

t (b) = 0,459
t (a) = 0,181

Linéarité

F = 348,744
rob.F = 57,008

p(F) = 0,000
rob.p(F) = 0,005

Linearity - E. coli - Tap water - data log

Niveau	Méthode de référence				Méthode alternative			
	Rep.1	Rep.2	M	SD	Rep.1	Rep.2	M	SD
1	0,778	0,903	0,841	0,088	0,845	0,778	0,812	0,047
2	1,491	1,322	1,407	0,120	1,362	1,322	1,342	0,028
3	1,672	1,623	1,648	0,035	1,602	1,623	1,613	0,015

q = 3
n = 2
N = qn = 6

Mx = 1,298
MEDx = 1,407
SDbx = 0,414

MEDwx = 0,088
SDwx = 0,062
rob. SDwx = 0,131

My = 1,255
MEDy = 1,342
SDby = 0,407

MEDwy = 0,028
SDwy = 0,023
rob. SDwy = 0,041

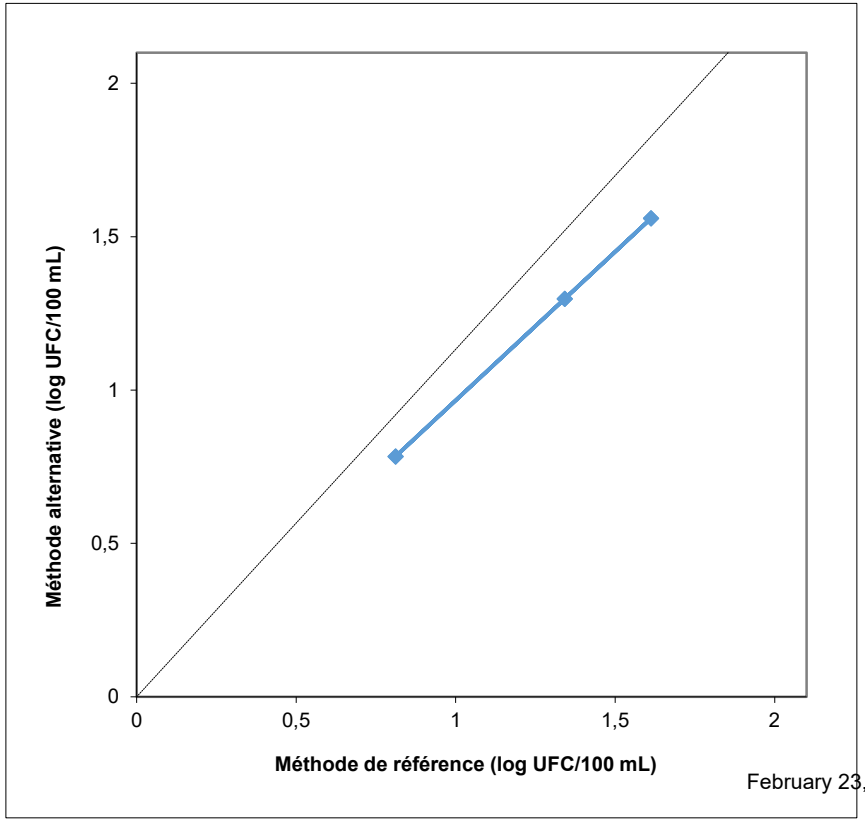
Choix méthode

OLS2; x=alt

R = 0,373 **r =** 0,999 **Sx =** 0,377
rob.R = 0,316 **b =** 0,970 **Sy =** 0,365
a = -0,003

M(Alt.)	**Réf.**	**Est. y**	Déviation
0,812	0,778	0,783	-0,005
1,342	1,491	1,298	0,194
1,613	1,672	1,560	0,112
0,812	0,903	0,783	0,120
1,342	1,322	1,298	0,025
1,613	1,623	1,560	0,063

Res.SD = 0,131



Sb = 0,156 **p(t;b=1) =** 0,855 **t (b) =** 0,195
Sa = 0,209 **p(t;a=0) =** 0,988 **t (a) =** 4,794

Linéarité

F = 124,457 **p(F) =** 0,002
robF = 37,193 **rob.p(F) =** 0,009

Linearity - E. coli - Bottled water - Raw data

Niveau	Méthode de référence				Méthode alternative			
	Rep.1	Rep.2	M	SD	Rep.1	Rep.2	M	SD
1	5	7	6,0	1,4	10	3	6,5	4,9
2	24	19	21,5	3,5	18	28	23,0	7,1
3	53	64	58,5	7,8	40	43	41,5	2,1

q = 3
n = 2
N = qn = 6

Mx = 28,667
MEDx = 21,500
SDbx = 26,974

MEDwx = 3,536
SDwx = 3,536
rob. SDwx = 5,242

My = 23,667
MEDy = 23,000
SDby = 17,510

MEDwy = 4,950
SDwy = 3,629
rob. SDwy = 7,338

Choix méthode

GMFR

R = 1,026
rob.R = 1,400
Res.SEM = 4,992
Res.SD = 7,059

Sx = 24,435
Sy = 16,158

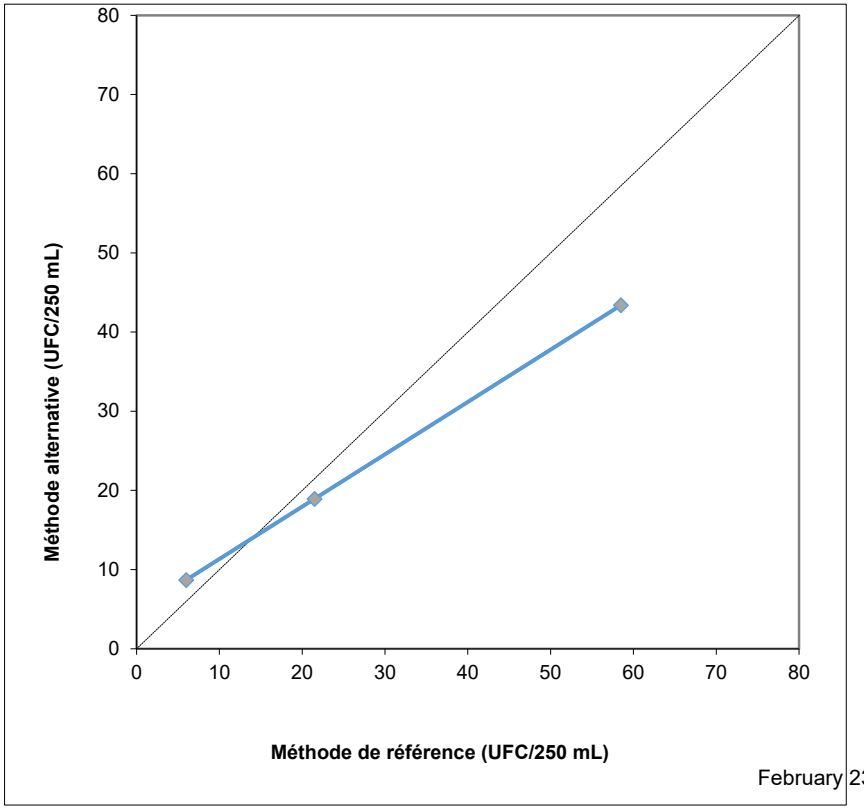
Est y	Déviation
8,678	-2,178
18,928	4,072
43,394	-1,894

r = 0,980
b = 0,661
a = 4,711

Sb = 0,144 **p(t;b=1) =** 0,079 **t (b) =** 2,345
Sa = 5,045 **p(t;a=0) =** 0,403 **t (a) =** 0,736

Linéarité

F = 12,139 **p(F) =** 0,040
rob.F = 0,701 **rob.p(F) =** 0,464



Linearity - E. coli - Bottled water - Data log

Niveau
1
2
3

Méthode de référence			
Rep.1	Rep.2	M	SD
0,699	0,845	0,772	0,103
1,380	1,279	1,329	0,072
1,724	1,806	1,765	0,058

Méthode alternative			
Rep.1	Rep.2	M	SD
1,000	0,477	0,739	0,370
1,255	1,447	1,351	0,136
1,602	1,633	1,618	0,022

q = 3
n = 2
N = qn = 6

Mx = 1,289
MEDx = 1,329
SDbx = 0,498

MEDwx = 0,072
SDwx = 0,057
rob. SDwx = 0,106

My = 1,236
MEDy = 1,351
SDby = 0,451

MEDwy = 0,136
SDwy = 0,161
rob. SDwy = 0,201

Choix méthode

GMFR

R = 2,848
rob.R = 1,891
Res.SEM = 0,114
Res.SD = 0,161

Sx = 0,450
Sy = 0,440

r = 0,988
b = 0,979
a = -0,026

Sb = 0,179
Sa = 0,240

p(t;b=1) = 0,912
p(t;a=0) = 0,919

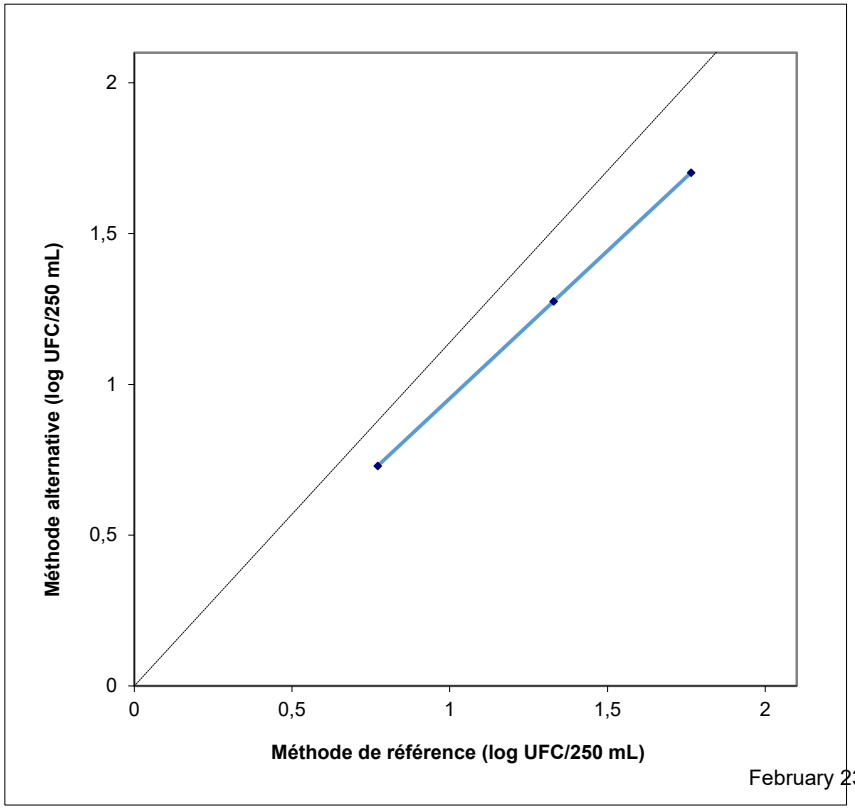
t (b) = 0,118
t (a) = 4,282

Est y	Déviation
0,730	0,009
1,276	0,076
1,702	-0,084

Linéarité

F = 0,986
rob.F = -0,446

p(F) = 0,394
rob.p(F) = 0,552



Linearity - Coliforms - Non bottled spring water - Raw data

Niveau	Méthode de référence				Méthode alternative			
	Rep.1	Rep.2	M	SD	Rep.1	Rep.2	M	SD
1	11	8	9,5	2,1	6	2	4,0	2,8
2	32	28	30,0	2,8	26	19	22,5	4,9
3	60	74	67,0	9,9	37	40	38,5	2,1

Mx = 35,5
MEDx = 30,0
SDbx = 29,1

My = 21,7
MEDy = 22,5
SDby = 17,3

q = 3
n = 2
N = qn = 6

MEDwx = 2,8
SDwx = 4,3
rob. SDwx = 4,2

MEDwy = 2,8
SDwy = 2,5
rob. SDwy = 4,2

Choix méthode

GMFR

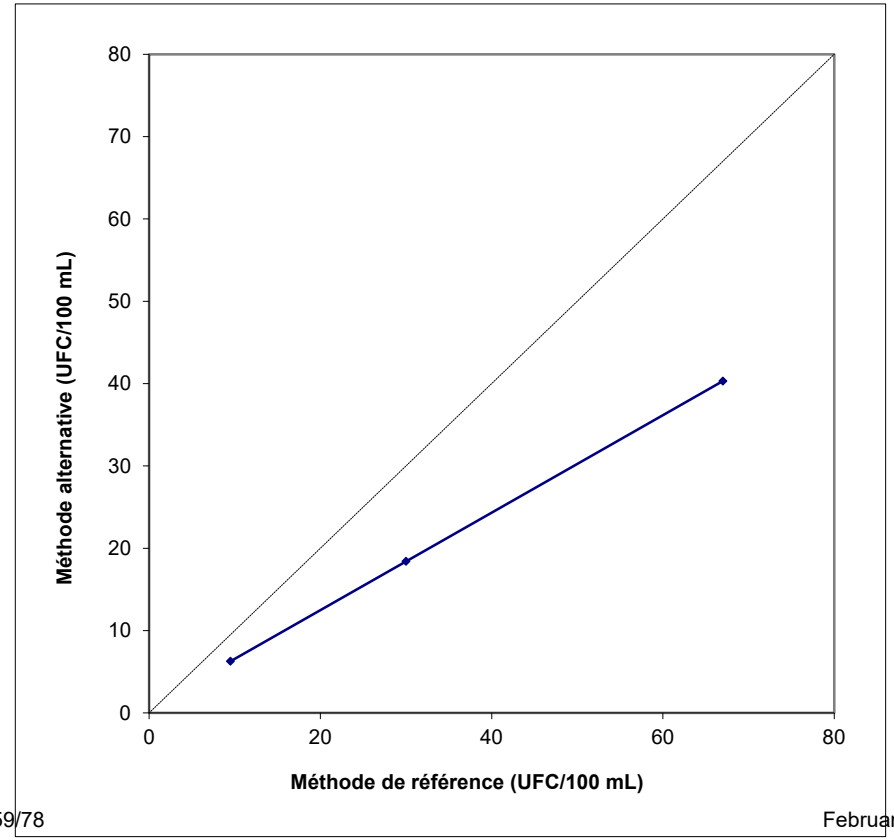
R = 0,579
rob.R = 1,000
Res.SEM = 5,019
Res.SD = 7,098

Est y	Déviation
6,274	-2,274
18,411	4,089
40,315	-1,815

Sx = 26,486
Sy = 15,680

r = 0,979
b = 0,592
a = 0,650

Sb = 0,134 **p(t;b=1) =** 0,038 **t (b) =** 3,045
Sa = 5,570 **p(t;a=0) =** 0,913 **t (a) =** 0,063



Linéarité

F = 29,680 **p(F) =** 0,012
rob.F = 8,460 **rob.p(F) =** 0,062

Linearity - Coliforms - Non bottled spring water - data log

Niveau	Méthode de référence				Méthode alternative			
	Rep.1	Rep.2	M	SD	Rep.1	Rep.2	M	SD
1	1,041	0,903	0,972	0,098	0,778	0,301	0,540	0,337
2	1,505	1,447	1,476	0,041	1,415	1,279	1,347	0,096
3	1,778	1,869	1,824	0,064	1,568	1,602	1,585	0,024

q = 3
n = 2
N = qn = 6

Mx = 1,424
MEDx = 1,476
SDbx = 0,428

MEDwx = 0,064
SDwx = 0,051
rob. SDwx = 0,095

My = 1,157
MEDy = 1,347
SDby = 0,548

MEDwy = 0,096
SDwy = 0,144
rob. SDwy = 0,143

Choix méthode

GMFR

R = 2,834
rob.R = 1,496
Res.SEM = 0,160
Res.SD = 0,226

Est y	Déviation
0,556	-0,017
1,227	0,120
1,689	-0,104

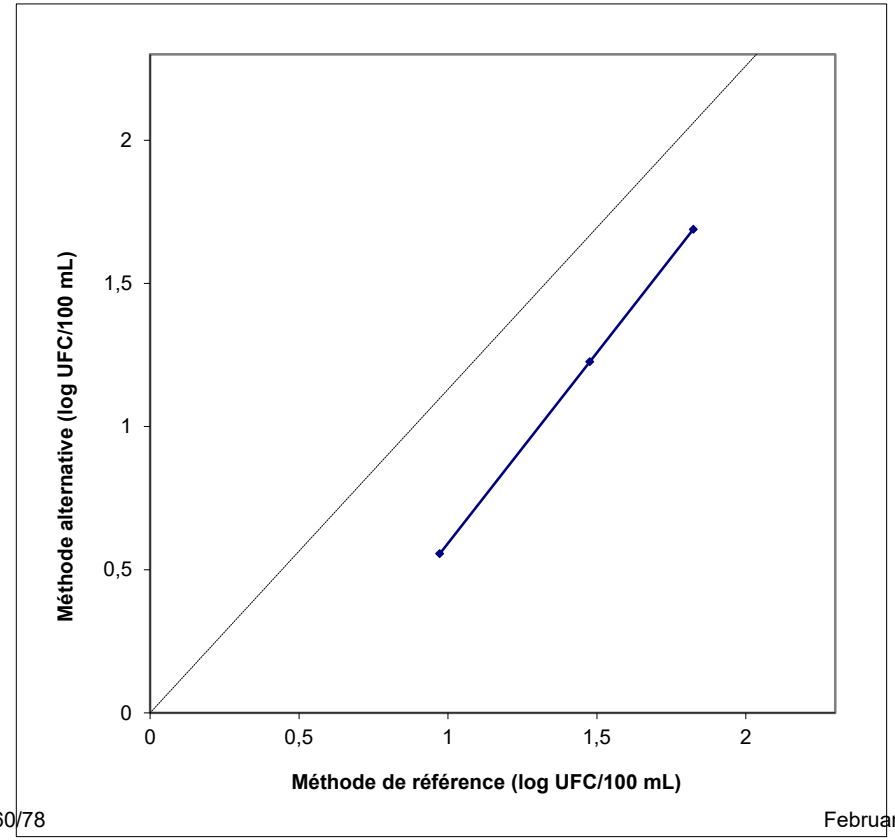
Sx = 0,387
Sy = 0,515

r = 0,980
b = 1,330
a = -0,737

Sb = 0,292
Sa = 0,426

p(t;b=1) = 0,321
p(t;a=0) = 0,158

t (b) = 1,132
t (a) = 4,080



Linéarité

F = 6,904
rob.F = 7,010

p(F) = 0,078
rob.p(F) = 0,077

Appendix D

DETERMINATION OF DETECTION AND QUANTIFICATION LIMITS

DETAILED RESULTS OBTAINED FOR THE DETERMINATION OF

LIMITS OF DETECTION (LOD) AND QUANTIFICATION (LOQ)

Limite de détection Eau de réseau (catégorie 1a)

Souche utilisée : *E. coli* (eau de réseau, Bruille-Saint-Amand, référence : Ec3e)

⇘ Résultats de la méthode alternative COMPASS® cc Agar

		4.1 Réplicats (nombre de colonies par gélose COMPASS® cc Agar)						
Niveau d'inoculation (UFC/100 mL)	**IC***	**1**	**2**	**3**	**4**	**5**	**6**	**Résultat**
0,52	0,447-0,613	1	1	Ø	Ø	Ø	Ø	2/4
1,05	0,893-1,123	2	1	1	1	Ø	Ø	4/6
1,83	1,522-2,122	2	3	3	1	3	5	6/6

Limite de détection Eau embouteillée (catégorie 2a)

Souche utilisée : *E. coli* (eau douce (puits), Lille, référence : Ec2e)

⇘ Résultats de la méthode alternative COMPASS® cc Agar

		4.2 Réplicats (nombre de colonies par gélose COMPASS® cc Agar)						
Niveau d'inoculation (UFC/250 mL) et / 100 mL	**IC***	**1**	**2**	**3**	**4**	**5**	**6**	**Résultat**
0,72	0,62-0,82	1	Ø	Ø	Ø	Ø	1	2/6
1,44	1,24-1,65	3	2	Ø	3	Ø	Ø	**3/6**
3,95	3,50-4,40	1	3	3	4	3	6	6/6

* IC : intervalle de confiance selon la loi de Poisson

DETAILED RESULTS OBTAINED FOR THE DETERMINATION OF

LIMITS OF DETECTION (LOD) AND QUANTIFICATION (LOQ)

Limite de détection Eau de source non embouteillée (catégorie 2a)

Souche utilisée : *Citrobacter youngae* (eau de cressonnière, Lillers, référence : Cit3e)

⇘ Résultats de la méthode alternative COMPASS® cc Agar

		4.3 Réplicats (nombre de colonies par gélose COMPASS® cc Agar)						
Niveau d'inoculation (UFC/100 mL)	**IC***	**1**	**2**	**3**	**4**	**5**	**6**	**Résultat**
0,74	0,67-0,81	1	Ø	Ø	Ø	1	Ø	2/6
1,48	1,35-1,62	Ø	Ø	Ø	1	1	1	**3/6**
3,11	2,77-3,48	1	3	4	3	Ø	Ø	4/6
4,50	3,82-5,36	2	1	3	2	2	1	6/6

* IC : intervalle de confiance selon la loi de Poisson

Appendix E

SELECTIVITY
Inclusivity/Exclusivity

Inclusivité

	Référence	Souche	Origine	Taux cible inoculum (UFC/100 mL) Résultat sur gélose		Méthode COMPASS® cc Agar			Commentaire
						Croissance et comptage (UFC/100 mL)			
				PCA	TTC	Aspect caractéristique	Résultat	Détection *E. coli*	
1	EC1e	*E. coli*	CIP 106878	47	49 T	+	49	+	
2	EC2e	*E. coli*	Eau douce (puits) - Lille (59)	39		+	40	+	
3	EC3e	*E. coli*	Eau de réseau - Bruille St Amand (59)	78		+	91	+	
4	EC4e	*E. coli*	Eau de surface - Lac du Héron, Villeneuve d'Ascq (59)	100		+	77	+	
5	EC5e	*E. coli*	Eau de surface - Etang du parc Barbieux, Croix (59)	42		+	36	+	
6	EC6e	*E. coli*	Eau de surface - Etang Les Parcs, Wingles (62)	72		+	77	+	
7	EC7e	*E. coli*	Eau de surface - Etang Parc d'Immercourt, Athies (62)	39		+	40	+	
8	EC8e	*E. coli*	Eau de surface - Base de loisirs, Biache- St-Vaast (62)	59		+	49	+	
9	EC9e	*E. coli*	Eau de surface - Etang Loisiparc, Aubigny-au-Bac (59)	80		+	83	+	
10	EC10e	*E. coli*	Eau de surface - Canal de la Sensée, Arleux (59)	67		+	57	+	
11	EC11e	*E. coli*	Eau de surface - Lac de Waziers (59)	91	93T	rose-violet	126	+	Colonie rose sur la membrane et violette au dos de la membrane
12	EC12e	*E. coli*	ATCC 8739	222		+	135	+	
13	EC13e	*E. coli*	Eau d'alimentation (colonne descendante, traitement javel) - Liencourt	62		+	56	+	
14	EC14e	*E. coli*	Eau de source - Bruille St Amand	53	55 NT	+	47	+	Colonie non typique sur TTC
15	EC15e	*E. coli*	Eau de source - Bruille St Amand	56	47 T	+	50	+	
16	EC16e	*E. coli*	Eau de forage - Noyelle sur Selle	72		+	60	+	
17	EC17e	*E. coli*	Eau de forage - Croix Fonsonnes	51		+	42	+	
18	EC18e	*E. coli*	Eau d'alimentation - Verchocq	50		+	49	+	
19	EC19e	*E. coli*	Eaux d'alimentation - Mouvaux	84		+	89	+	
20	EC20e	*E. coli*	Eau de source - Bruille St Amand	55	57 T	rose	50	-	Détection coliforme Colonie typique sur TTC
21	EC22e	*E. coli*	Effluent de station - Bierne	71		+	68	+	

β-gal : souche ayant (+) ou non (-) une activité β-D-Galactosidase
GUD : souche ayant (+) ou non (-) une activité β-D-Glucuronidase

\+ : résultat positif
\- : résultat négatif

NT: colonie non typique
T : colonie typique

	Référence	Souche	Origine	Taux cible inoculum (UFC/100 mL) Résultat sur gélose		Méthode COMPASS® cc Agar			Commentaire
						Croissance et comptage (UFC/100 mL)			
				PCA	TTC	Aspect caractéristique	Résultat	Détection *E. coli*	
1	Cit1e	*Citrobacter braakii*	Eau de forage (Steenw erck)	140		+	180	+	
2	Cit2e	*Citrobacter freundii*	ATCC 8090	76		+	56	+	
3	Cit3e	*Citrobacter youngae*	Eau de cressonnière (Lillers)	180		+	157	+	
4	Cit4e	*Citrobacter youngae*	Eau de forage (Paillencourt)	73		+	59	+	
5	Ent1e	*Enterobacter cloacae*	WR3	90		+	95	+	
6	Ent2e	*Enterobacter cloacae*	Eau de piscine (Roubaix)	21		+	25	+	
7	Ent3e	*Enterobacter sakazakii*	CIP 5733	90		+	73	+	
8	ESC15	*Escherichia hermanii*	Alimentaire	29		+	17	+	
9	ESC50	*Escherichia vulneris*	Alimentaire	18		+	11	+	
10	Ha67	*Hafnia alvei*	Filet de flétan	16	16 NT	-	8	-	Colonies blanches non caractéristiques : Souche β-gal-/GUD Colonies non caractéristiques sur TTC
11	Ha37	*Hafnia alvei*	Persil	91	85 NT	-	51	-	Colonies blanches non caractéristiques : Souche β-gal-/GUD Colonies noires non caractéristiques sur TTC
11	Kle1e	*Klebsiella oxytoca*	ATCC 49473	37		+	24	+	
12	Kle2e	*Klebsiella planticola*	ATCC 33531	26		+	19	+	
13	Kle3e	*Klebsiella terrigena*	ATCC 33257	107		+	49	+	
14	Kle4e	*Klebsiella pneumoniae*	ATCC 13883	78		+	42	+	
15	Lec1e	*Leclercia adecarboxylata*	Eau de puits	44	52 T	+	31	+	
16	EN70	*Moellerella wisconsensis*	Andouillette	51		+	37	+	
17	Pan1e	*Pantoea spp*	Eau de source (Bruille-les-St-Amand)	31		+	22	+	
18	Rah1e	*Rahnella aqualitilis*	Eau de source (Bruille-les-St-Amand)	27	12 T	+	2	+	
19	Ser1e	*Serratia fonticola*	ATCC 29845	1		+	3	+	
20	Ser2e	*Serratia marcescens*	ATCC 8100	38		+	46	+	
21	Ent5e	*Enterobacter sakazakii*	IPL eau	82		+	78	+	
22	Kle6e	*Klebsiella pneumoniae*	cuve eau récupérée (Le Havre)	78		+	64	+	
23	Ser3e	*Serratia marcescens*	IPL eau	119		+	116	+	

β-gal : souche ayant (+) ou non (-) une activité β-D-Galactosidase
GUD : souche ayant (+) ou non (-) une activité β-D-Glucuronidase

\+ : résultat positif
\- : résultat négatif

NT: colonie non typique
T : typique

Inclusivité

	Référence	Souche	Origine	Taux cible inoculum (UFC/100 mL) sur PCA	Méthode COMPASS® cc Agar		Commentaires
					Colonies	Détection *E.coli* /Coliformes	
1	Aci1e	*Acinetobacter johnsonii*	CIP 64.6T	9,60E+05	NT	-	
2	Aer1e	*Aeromonas hydro/caviae*	Eau de forage (Wattrelos)	1,14E+05	Ø	-	
3	Aer2e	*Aeromonas sp*	ATCC 7966	6,56E+04	Ø	-	
4		*Aeromonas sp*	ipl72214	1,17E+04	Ø	-	
5	Ba 47	*Bacillus badius*	Environnement	3,60E+01	Ø	-	
6	Ba1e	*Bacillus cereus*	CIP 64.52	3,40E+03	Ø	-	
7	Ba 26	*Bacillus circulans*	Environnement	3,27E+04	Ø	-	
8	Ba 24	*Bacillus mycoides*	Environnement (sol)	1,96E+04	Ø	-	
9	Ba2e	*Bacillus subtilis*	ATCC 6633	3,40E+04	Ø	-	
10	Cor1e	*Corynebacterium propinquum*	IPL, eau douce (réseau)	6,32E+04	Ø	-	
11	17	*Erwinia spp*	Alimentaire	4,80E+05	colonies roses	+	Colonies non caractéristiques sur TTC : souche GAL+/GLUC- Souche β-gal+/GUD-
12	Prot1e	*Proteus mirabilis*	Eau de rivière	2,34E+05	NT	-	
13	Prot2e	*Proteus vulgaris*	Eau de rivière	2,05E+05	NT	-	
14	Prov1e	*Providencia stuartii*	Eau de rivière	1,74E+05	NT	-	
15	Ps1e	*Pseudomonas aeruginosa*	ATCC 9027	1,41E+05	Ø	-	
16	Ps2e	*Pseudomonas aeruginosa*	Eau de thermes	1,78E+05	Ø	-	
17	Ps4e	*Pseudomonas fluorescens*	Eau douce (La Chapelle St Hersin)	2,16E+05	NT	-	
18	PS12	*Pseudomonas fluorescens*	Eau minérale	1,23E+04	NT	-	
19	IPL832	*Pseudomonas putida*	Collection	1,50E+03	NT	-	
20	Ps3e	*Pseudomonas stutzeri*	Effluent (Harnes)	2,90E+05	NT	-	
21	S162	*Salmonella* IIIb 16:z10:e,n,x,z15	Boue station d'épuration	5,10E+05	colonies violettes	+	Colonies non caractéristiques sur TTC. Souche β-gal+/GUD+
22	Sal1e	*Salmonella* Enterica	Eaude forage	1,16E+05	NT	-	
23	Sal3e	*Salmonella* Enterica	Eau de forage	1,48E+05	NT	-	
24	Sal4e	*Salmonella* Enteritidis	Collection	2,64E+05	NT	-	
25	Sal5e	*Salmonella* Typhimurium	ATCC 14028	1,50E+05	NT	-	
26	S53	*Salmonella* Umbilo	Eau (flaque)	2,85E+05	NT	-	
27	EN72	Shigella flexneri	Alimentaire	2,58E+05	NT	-	
28	EN73	*Shigella sonnei*	Alimentaire	3,65E+05	colonies roses	+	Colonies non caractéristiques sur TTC. Souche β-gal+/GUD-
29	Sta1e	*Staphylococcus aureus*	ATCC 9144	5,60E+05	Ø	-	
30		*Staphylococcus aureus*	ipl809302	2,48E+05	Ø	-	
31	Vib1e	*Vibrio fluvialis*	Eau de rivière	4,00E+03	NT	-	Colonies beiges non caractéristiques
32	Vib2e	*Vibrio parahaemolyticus*	Eau de réseau	2,06E+04	Ø	-	

β-gal : souche ayant (+) ou non (-) une activité β-D-Galactosidase
GUD : souche ayant (+) ou non (-) une activité β-D-Glucuronidase

+ : résultat positif
- : résultat négatif

NT: colonie non typique
T : typique

Ø : absence de colonies
(x) : nombre de colonies

Appendix F1

COLLABORATIVE STUDY
RESULTS OF COUNTS OF
CULTURABLE MICROORGANISMS

(at 22℃ and 36℃)

Results of counts of revivable flora at 22°C and 36°C

Laboratoire	**Germes revivifiables à 22℃** (UFC/mL)	**Germes revivifiables à 36℃** (UFC/mL)
A	122	2 Ne*
B	73	30
C	150	54
D	75	2 Ne
E	100	35
F	75	4 Ne
G	98	2 Ne
H	183	7 Ne
I	44	5 Ne
J	190	6 Ne
K	236	10
L	130	5 Ne
M	110	1 Ne
N	150	20
O	243	16
Laboratoire expert	450	25

* Ne : nombre estimé (<10 UFC/mL)

Appendix F2

COLLABORATIVE STUDY

DETAILED RESULTS
FROM THE EXPERT LABORATORY
AND
PARTICIPATING LABORATORIES

SUMMARY OF RESULTS

Raw results:
Reference Method

NIVEAU 0

Laboratoire	Méthode de référence NF EN ISO 9308-1 - Filtration 100 mL							
	21 ± 3 heures d'incubation							
	Réplicat 1				Réplicat 2			
	Nombre de colonies typiques sur TTC		Résultats en UFC / 100 mL		Nombre de colonies typiques sur TTC		Résultats en UFC / 100 mL	
	Comptées	Confirmées	Ct	*E. coli*	Comptées	Confirmées	Ct	*E. coli*
A	1	1	1	<1	0	0	<1	<1
B	0	0	<1	<1	0	0	<1	<1
C	0	0	<1	<1	0	0	<1	<1
D	0	0	<1	<1	0	0	<1	<1
E	1	/	/	/	0	0	<1	<1
F	1	1	1	<1	0	0	<1	<1
G	3	3	1	<1	3	3	2	<1
H	0	0	<1	<1	0	0	<1	<1
I	0	0	<1	<1	0	0	<1	<1
J	0	0	<1	<1	1	1	1	<1
K	0	0	<1	<1	0	0	<1	<1
L	4	/	/	/	5	/	/	/
M	0	0	<1	<1	0	0	<1	<1
N	0	0	<1	<1	0	0	<1	<1
O	0	0	<1	<1	0	0	<1	<1
Laboratoire expert	0	0	<1	<1	0	0	<1	<1

Laboratoire	Méthode de référence NF EN ISO 9308-1 - Filtration 100 mL							
	44 ± 4 heures d'incubation							
	Réplicat 1				Réplicat 2			
	Nombre de colonies typiques sur TTC		Résultats en UFC / 100 mL		Nombre de colonies typiques sur TTC		Résultats en UFC / 100 mL	
	Comptées	Confirmées	Ct	*E. coli*	Comptées	Confirmées	Ct	*E. coli*
A	1	1	1	<1	0	0	<1	<1
B	0	0	<1	<1	0	0	<1	<1
C	3	3	3	<1	0	0	<1	<1
D	0	0	<1	<1	0	0	<1	<1
E	5	5	5	**1**	0	0	<1	<1
F	1	1	1	<1	0	0	<1	<1
G	3	/	/	/	3	/	/	/
H	0	0	<1	<1	0	0	<1	<1
I	11	10	11	<1	6	6	5	<1
J	8	8	8	<1	5	4	5	<1
K	4	4	3	<1	8	8	7	<1
L	6	6	6	<1	6	6	6	<1
M	0	0	<1	<1	0	0	<1	<1
N	0	0	<1	<1	0	0	<1	<1
O	6	6	6	<1	8	8	8	<1
Laboratoire expert	0	0	<1	<1	0	0	<1	<1

Ct : coliformes totaux

Raw results:
Reference Method

NIVEAU 1

Laboratoire	Méthode de référence NF EN ISO 9308-1 - Filtration 100 mL							
	21 ± 3 heures d'incubation							
	Réplicat 1				Réplicat 2			
	Nombre de colonies typiques sur TTC		Résultats en UFC / 100 mL		Nombre de colonies typiques sur TTC		Résultats en UFC / 100 mL	
	Comptées	Confirmées	Ct	*E. coli*	Comptées	Confirmées	Ct	*E. coli*
A	14	14	14	14	6	6	6	6
B	13	10	<1	<1	11	10	1	1
C	10	10	10	10	5	5	5	5
D	8	8	8	8	9	9	9	9
E	11	/	/	/	9	/	/	/
F	12	12	12	12	12	12	12	12
G	11	11	10	7	21	15	20	18
H	8	/	/	/	9	/	/	/
I	10	10	10	10	3	3	3	3
J	12	10	12	12	10	10	10	10
K	14	14	14	14	9	9	9	9
L	7	7	7	5	9	9	9	4
M	7	7	7	7	14	10	14	14
N	13	10	8	5	10	10	10	5
O	9	9	9	9	9	9	9	9
Laboratoire expert	8	8	8	8	4	4	4	4

Laboratoire	Méthode de référence NF EN ISO 9308-1 - Filtration 100 mL							
	44 ± 4 heures d'incubation							
	Réplicat 1				Réplicat 2			
	Nombre de colonies typiques sur TTC		Résultats en UFC / 100 mL		Nombre de colonies typiques sur TTC		Résultats en UFC / 100 mL	
	Comptées	Confirmées	Ct	*E. coli*	Comptées	Confirmées	Ct	*E. coli*
A	14	14	14	14	6	6	6	6
B	13	/	/	/	11	/	/	/
C	10	10	10	10	5	5	5	5
D	8	8	8	8	9	9	9	9
E	11	10	11	11	9	9	9	8
F	13	13	13	12	14	14	14	12
G	11	/	/	/	21	/	/	/
H	8	8	8	8	9	9	9	9
I	10	10	10	10	6	6	6	5
J	12	10	12	12	15	5	15	10
K	14	/	/	/	9	/	/	/
L	7	/	/	/	9	/	/	/
M	7	/	/	/	14	/	/	/
N	13	/	/	/	10	/	/	/
O	9	/	/	/	9	/	/	/
Laboratoire expert	8	/	/	/	4	/	/	/

Ct : coliformes totaux

Raw results:
Reference Method

NIVEAU 2

Laboratoire	Méthode de référence NF EN ISO 9308-1 - Filtration 100 mL							
	21 ± 3 heures d'incubation							
	Réplicat 1				Réplicat 2			
	Nombre de colonies typiques sur TTC		Résultats en UFC / 100 mL		Nombre de colonies typiques sur TTC		Résultats en UFC / 100 mL	
	Comptées	Confirmées	Ct	*E. coli*	Comptées	Confirmées	Ct	*E. coli*
A	25	10	25	25	27	10	26	27
B	29	10	26	26	28	10	13	13
C	26	10	26	26	30	10	30	30
D	21	10	21	21	17	10	17	17
E	33	/	/	/	26	/	/	/
F	24	10	24	24	28	10	28	28
G	30	14	27	27	35	17	32	31
H	32	/	/	/	32	/	/	/
I	29	10	29	29	18	10	18	18
J	36	10	36	36	26	10	26	26
K	21	10	16	16	30	10	30	30
L	25	10	25	25	17	10	17	17
M	25	10	25	25	37	10	37	37
N	29	10	29	23	24	10	24	22
O	23	10	23	23	28	10	28	28
Laboratoire expert	16	10	16	16	26	10	26	26

Laboratoire	Méthode de référence NF EN ISO 9308-1 - Filtration 100 mL							
	44 ± 4 heures d'incubation							
	Réplicat 1				Réplicat 2			
	Nombre de colonies typiques sur TTC		Résultats en UFC / 100 mL		Nombre de colonies typiques sur TTC		Résultats en UFC / 100 mL	
	Comptées	Confirmées	Ct	*E. coli*	Comptées	Confirmées	Ct	*E. coli*
A	25	10	25	25	27	10	26	27
B	29	10	26	26	28	10	13	13
C	26	/	/	/	30	/	/	/
D	21	21	21	21	17	/	/	/
E	33	10	33	33	26	10	26	26
F	24	10	24	24	28	10	28	28
G	30	/	/	/	35	/	/	/
H	32	10	32	32	32	10	32	32
I	29	10	29	29	20	3	20	19
J	36	10	36	36	26	10	26	26
K	21	/	/	/	30	/	/	/
L	25	/	/	/	17	/	/	/
M	25	/	/	/	37	/	/	/
N	29	/	/	/	24	/	/	/
P	23	/	/	/	28	/	/	/
Laboratoire expert	16	/	/	/	26	/	/	/

Ct : coliformes totaux

Raw results:
Reference Method

NIVEAU 3

Laboratoire	Méthode de référence NF EN ISO 9308-1 - Filtration 100 mL							
	21 ± 3 heures d'incubation							
	Réplicat 1				Réplicat 2			
	Nombre de colonies typiques sur TTC		Résultats en UFC / 100 mL		Nombre de colonies typiques sur TTC		Résultats en UFC / 100 mL	
	Comptées	Confirmées	Ct	*E. coli*	Comptées	Confirmées	Ct	*E. coli*
A	104	10	104	104	70	10	70	70
B	67	10	20	20	53	10	42	42
C	106	10	106	106	70	10	70	70
D	60	10	60	60	82	10	82	82
E	88	/	/	/	96	/	/	/
F	88	10	88	88	91	10	91	91
G	118	14	117	114	96	12	96	95
H	90	/	/	/	94	/	/	/
I	98	10	98	98	86	10	86	86
J	94	10	94	94	101	10	101	101
K	75	10	75	75	82	10	82	82
L	76	10	76	76	69	10	69	69
M	85	10	85	85	95	10	95	95
N	91	10	91	91	91	10	91	91
O	102	10	102	102	85	10	85	85
Laboratoire expert	82	10	82	82	96	10	96	96

Laboratoire	Méthode de référence NF EN ISO 9308-1 - Filtration 100 mL							
	44 ± 4 heures d'incubation							
	Réplicat 1				Réplicat 2			
	Nombre de colonies typiques sur TTC		Résultats en UFC / 100 mL		Nombre de colonies typiques sur TTC		Résultats en UFC / 100 mL	
	Comptées	Confirmées	Ct	*E. coli*	Comptées	Confirmées	Ct	*E. coli*
A	104	10	104	104	70	10	70	70
B	67	10	20	20	/	/	/	/
C	108	2	108	108	70	/	/	/
D	60	10	60	60	82	10	82	82
E	88	10	88	88	96	10	96	96
F	88	10	88	88	91	10	91	91
G	118	/	/	/	96	/	/	/
H	90	10	90	90	94	10	94	94
I	98	/	/	/	86	/	/	/
J	94	/	/	/	101	/	/	/
K	86	10	86	86	82	10	82	82
L	76	/	/	/	69	/	/	/
M	85	/	/	/	95	/	/	/
N	91	/	/	/	91	/	/	/
O	102	/	/	/	85	/	/	/
Laboratoire expert	82	/	/	/	96	/	/	/

Ct : coliformes totaux

Raw results:
Alternative Method

Niveau 0

Laboratoire	Méthode alternative COMPASS® cc Agar - Filtration 100 mL							
	21 ± 3 heures d'incubation							
	Réplicat 1				Réplicat 2			
	Nombre de colonies typiques sur Compass cc		Résultats en UFC / 100 mL		Nombre de colonies typiques sur Compass cc		Résultats en UFC / 100 mL	
	Ct	*E. coli*	Ct	*E. coli*	Ct	*E. coli*	Ct	*E. coli*
A	0	0	<1	<1	1	0	1	<1
B	1	0	1	<1	1	0	1	<1
C	0	0	<1	<1	0	0	<1	<1
D	1	1	2	**1**	0	0	<1	<1
E	1	0	1	<1	1	0	1	<1
F	0	0	<1	<1	0	0	<1	<1
G	2	0	2	<1	3	0	3	<1
H	0	0	<1	<1	0	0	<1	<1
I	0	0	<1	<1	0	0	<1	<1
J	0	0	<1	<1	0	0	<1	<1
K	0	0	<1	<1	0	0	<1	<1
L	7	0	1	<1	8	0	8	<1
M	0	0	<1	<1	0	0	<1	<1
N	0	0	<1	<1	0	0	<1	<1
O	1	0	1	<1	0	0	<1	<1
Laboratoire expert	2	0	2	<1	4	0	0	<1

Niveau 1

Laboratoire	Méthode alternative COMPASS® cc Agar - Filtration 100 mL							
	21 ± 3 heures d'incubation							
	Réplicat 1				Réplicat 2			
	Nombre de colonies typiques sur Compass cc		Résultats en UFC / 100 mL		Nombre de colonies typiques sur Compass cc		Résultats en UFC / 100 mL	
	Ct	*E. coli*	Ct	*E. coli*	Ct	*E. coli*	Ct	*E. coli*
A	0	7	7	7	0	8	8	8
B	2	8	10	8	7	4	11	7
C	0	10	10	10	0	7	7	7
D	1	8	9	8	1	12	13	12
E	0	6	6	6	0	2	2	2
F	0	5	5	5	0	5	5	5
G	5	7	12	7	2	15	17	15
H	0	9	9	9	0	2	2	2
I	0	13	13	13	0	14	14	14
J	0	4	4	4	1	7	8	7
K	0	5	5	5	0	20	20	20
L	4	10	14	10	4	11	15	11
M	0	8	8	8	0	8	8	8
N	0	13	13	13	0	5	5	5
O	0	12	12	12	1	5	6	5
Laboratoire expert	4	11	15	11	0	13	13	13

C : coliformes autres que *E. coli*

Ct : coliformes totaux

Raw results:
Alternative Method

Niveau 2

Laboratoire	Méthode alternative COMPASS® cc Agar - Filtration 100 mL							
	21 ± 3 heures d'incubation							
	Réplicat 1				Réplicat 2			
	Nombre de colonies typiques sur Compass cc		Résultats en UFC / 100 mL		Nombre de colonies typiques sur Compass cc		Résultats en UFC / 100 mL	
	C*	*E. coli*	Ct	*E. coli*	C*	*E. coli*	Ct	*E. coli*
A	0	20	20	20	0	23	23	23
B	6	29	37	29	5	22	27	22
C	0	21	21	21	0	26	26	26
D	0	23	23	23	0	28	28	28
E	0	36	36	36	0	25	25	25
F	1	26	27	26	0	29	29	29
G	0	27	27	27	2	29	31	29
H	0	36	36	36	0	24	24	24
I	1	31	32	31	1	23	24	23
J	0	21	21	21	0	16	16	16
K	0	30	30	30	10	22	23	22
L	3	18	21	18	2	26	28	26
M	0	23	23	23	2	25	27	25
N	0	17	17	17	0	25	25	25
O	0	17	17	17	0	29	29	29
Laboratoire expert	4	25	29	25	1	27	28	27

Niveau 3

Laboratoire	Méthode alternative COMPASS® cc Agar - Filtration 100 mL							
	21 ± 3 heures d'incubation							
	Réplicat 1				Réplicat 2			
	Nombre de colonies typiques sur Compass cc		Résultats en UFC / 100 mL		Nombre de colonies typiques sur Compass cc		Résultats en UFC / 100 mL	
	C*	*E. coli*	Ct	*E. coli*	C*	*E. coli*	Ct	*E. coli*
A	0	96	96	96	0	78	78	78
B	4	69	73	69	4	58	62	58
C	0	91	91	91	0	80	80	80
D	0	73	73	73	0	75	75	75
E	0	92	92	92	0	80	80	80
F	1	92	93	92	1	89	90	89
G	2	79	81	79	0	92	92	92
H	0	110	110	110	0	109	109	109
I	1	82	83	82	0	86	86	86
J	0	102	102	102	0	93	93	93
K	0	75	75	75	0	73	73	73
L	2	70	72	70	1	68	69	68
M	0	>100	>100	>100	0	60	60	60
N	0	91	91	91	0	92	92	92
O	0	75	75	75	0	84	84	84
Laboratoire expert	1	100	101	100	0	87	87	87

C : coliformes autres que *E. coli*

Ct : coliformes totaux

Appendix F3

COLLABORATIVE STUDY

SUMMARY OF RESULTS

Laboratoire	Résultats du dénombrement d'Escherichia coli en UFC/100 ml											
	Niveau 1				Niveau 2				Niveau 3			
	MR		MA		MR		MA		MR		MA	
	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2
A	14	6	7	8	25	26	20	23	104	70	96	78
C	10	5	10	7	26	30	21	26	108	70	91	80
D	8	9	8	12	21	17	23	28	60	82	73	75
F	12	12	5	5	24	28	26	29	88	91	92	89
G	7	18	7	15	27	31	27	29	114	95	79	92
I	10	5	13	14	29	19	31	23	98	86	82	86
J	12	10	4	7	36	26	21	16	94	101	102	93
K	14	9	5	20	16	30	30	22	86	82	75	73
L	5	4	10	11	25	17	18	26	76	69	70	68
N	5	5	13	5	23	22	17	25	91	91	91	92
O	9	9	12	5	23	28	17	29	102	85	75	84

Laboratoire	Résultats du dénombrement d'Escherichia coli en log UFC/100 ml											
	Niveau 1				Niveau 2				Niveau 3			
	MR		MA		MR		MA		MR		MA	
	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2	R1	R2
A	1,146	0,778	0,845	0,903	1,398	1,415	1,301	1,362	2,017	1,845	1,982	1,892
C	1,000	0,699	1,000	0,845	1,415	1,477	1,322	1,415	2,033	1,845	1,959	1,903
D	0,903	0,954	0,903	1,079	1,322	1,230	1,362	1,447	1,778	1,914	1,863	1,875
F	1,079	1,079	0,699	0,699	1,380	1,447	1,415	1,462	1,944	1,959	1,964	1,949
G	0,845	1,255	0,845	1,176	1,431	1,491	1,431	1,462	2,057	1,978	1,898	1,964
I	1,000	0,699	1,114	1,146	1,462	1,279	1,491	1,362	1,991	1,934	1,914	1,934
J	1,079	1,000	0,602	0,845	1,556	1,415	1,322	1,204	1,973	2,004	2,009	1,968
K	1,146	0,954	0,699	1,301	1,204	1,477	1,477	1,342	1,934	1,914	1,875	1,863
L	0,699	0,602	1,000	1,041	1,398	1,230	1,255	1,415	1,881	1,839	1,845	1,833
N	0,699	0,699	1,114	0,699	1,362	1,342	1,230	1,398	1,959	1,959	1,959	1,964
O	0,954	0,954	1,079	0,699	1,362	1,447	1,230	1,462	2,009	1,929	1,875	1,924