RAPID'P.aeruginosa Agar for enumeration of Pseudomonas aeruginosa

February 2024

Quantitative method

Summary report

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This report included 65 pages with 6 appendices. Reproduction of this report is only permitted in its full form.

Foreword

***Alternative method**:*
RAPID'P. aeruginosa Agar

***Validation protocol**:*

Protocol for the validation of an alternative commercial method against a reference method (revision 2 – May 2013).

***Reference method**:*
NF EN ISO 16266 (April 2006) : « Water quality - Detection and enumeration of Pseudomonas aeruginosa - Method by membrane filtration»

Scope:

- All water for human consumption
- Treated recreational water

Certification body :
AFNOR Certification https://nf-validation.afnor.org/

1 Introduction

The medium RAPID'*P. aeruginosa* was validated in 2012 and renewed in 2016 and 2020. In 2021, an extension of the method for application to all water for human consumption and treated recreational water was carried out. In 2024, Bio-Rad wishes to renewal this method.

1.1 History of validation

The history of validation was summarized in the table below:

Approval	Type of certification	Comments	Expert laboratory	Protocole of validation
2012	Initial Validation		ADRIA développement	Rev. 1 (2010)
2016	Renewal 1	No change Changes involved in updating the validation protocol have been applied.	ISHA	Rev. 2 (2013)
2020	Renewal 2	No change	AdGène laboratoire	Rev 2 (2013)
2021	Extension	Application to all waters for human consumption and treated recreational waters	AdGène laboratoire	Rev 2 (2013)
2024	Renewal 2	No change	Normec Abiolab AdGène	Rev 2 (2013)

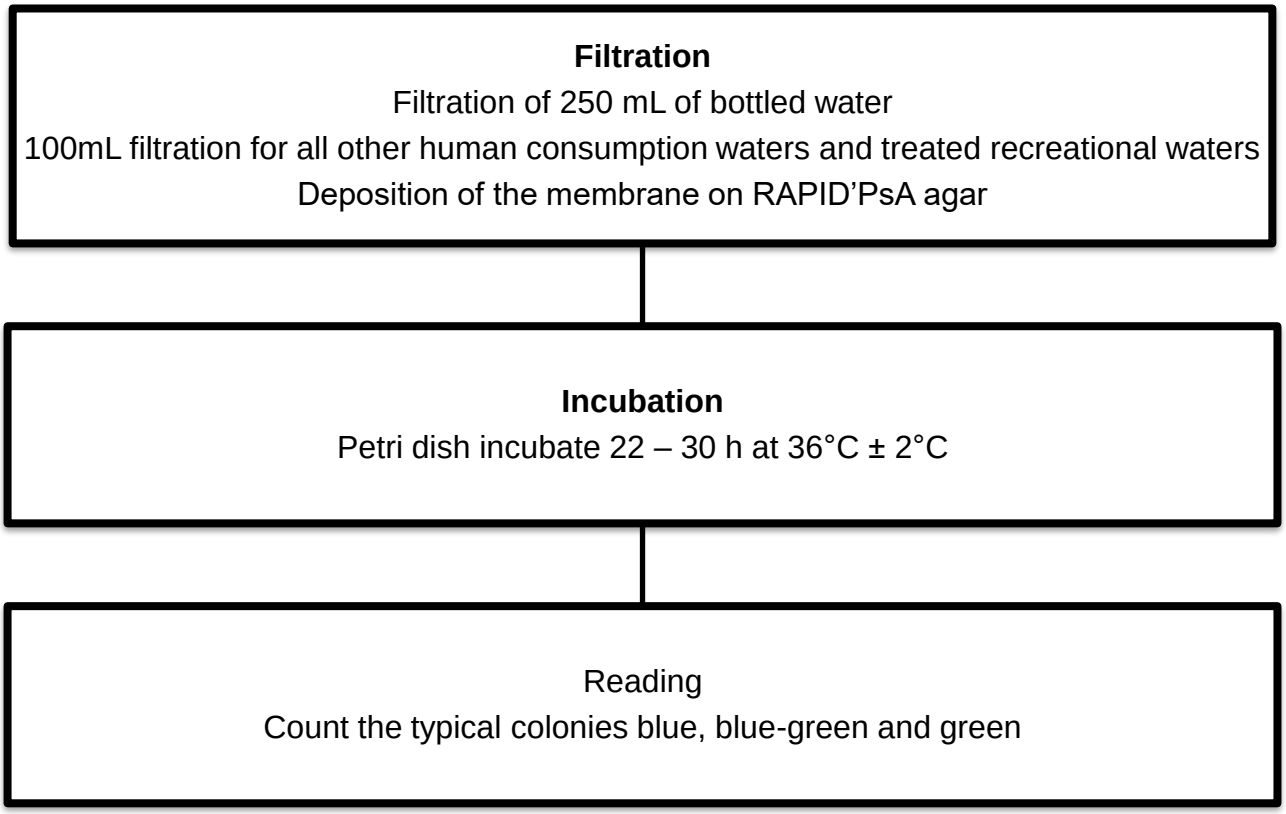
2 Method protocols

2.1 Alternative method

The RAPID'*Pseudomonas aeruginosa* (RAPID'PsA) method (chromogenic media) allows to research and enumerate *Pseudomonas aeruginosa* in water membrane filtration in 22 – 30 hours and without confirmation step.

The protocol of the alternative method is presented in figure 1.

Figure 1: protocol of the alternative method



As part the method-comparison studies, it's the minimum incubation time of the method which has been tested, in 22 h - except for exclusivity tests for which the maximum incubation time of 30 hours has been tested.

2.2 Reference method

The standard ISO 16266 (April 2006) « Water quality - Detection and enumeration of Pseudomonas aeruginosa - Method by membrane filtration» was used as the reference method.

The protocol of the reference method is presented in appendix 1.

3 Summary of the results obtained

3.1 Comparative study

The results presented are from the initial validation for the "bottled water" application domain (2012 - ADRIA DEVELOPPEMENT) and the extension for the "human consumption water" & "treated recreational water" application domains (2021-AdGène Laboratoire).

The following characteristics were studied during the comparative study of the methods : the linearity, the relative accuracy, the limit of detection and the limit of quantification, the inclusivity, the exclusivity, and the practicability.

3.1.1 Relative accuracy

The relative accuracy is defined as the closeness of agreement between test result and the accepted reference value. The 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.

3.1.1.1 Number and nature of samples

One water category was tested in parallel by the reference and alternative methods. The samples were analysed in duplicate. 250mL (bottled water) or 100mL (water for human consumption* & treated recreational water) were filtered for each sample.

The following types of waters were analysed for the "human consumption waters" category:

- Mineral waters (2012)
- Spring waters (2012)
- Well waters (2021)
- Fountain waters (2021)
- Tap waters (2021)

The following water types were analysed for the "treated recreational water" category:

- Swimming-pool waters (2021)
- Thermal waters (2021)

The number of analysed and exploited samples by type of water is presented in the table below

** Note: A filtration volume of 250 mL was used for all human consumption waters. However, the filtration volume used in Europe is generally 100 mL for human consumption waters other than bottled waters. This difference in volume has no impact on the performance of the alternative method.*

Table 1: Number and nature of samples analysed

Type of water	Number of analysed samples	Number of exploited samples
Mineral water	19	**11**
Spring water	23	**10**
Well waters	9	**7**
Fountain waters	8	**7**
Tap waters	8	**7**
Total	67	**42**
Swimming-pool waters	14	**11**
Thermal waters	12	**10**
Total	42	21

67 samples were analysed for the human consumption water category, giving 42 results exploitable by both methods. 26 samples were analysed for the treated recreational water category giving 21 usable results.

3.1.1.2 Raw results

Raw results are presented in appendix 2; two-dimensional graphs are shown in Figure 2 & 3. The y-axis is reserved for the alternative method and the x-axis for the reference method.

The representation of a line of equation “y = x“ figures dashed on the graphs.

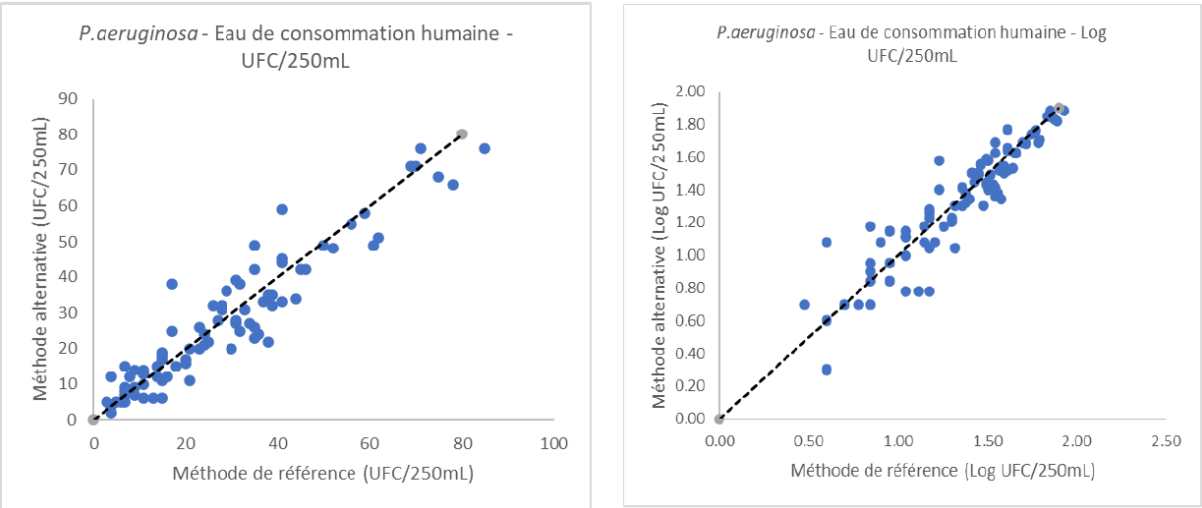


Figure 2 : two-bidimensional graphs for relative accuracy in CFU /250 mL and log CFU / 250 mL for human consumption water (2012 - ADRIA Développement & 2021 - AdGène Laboratoire)

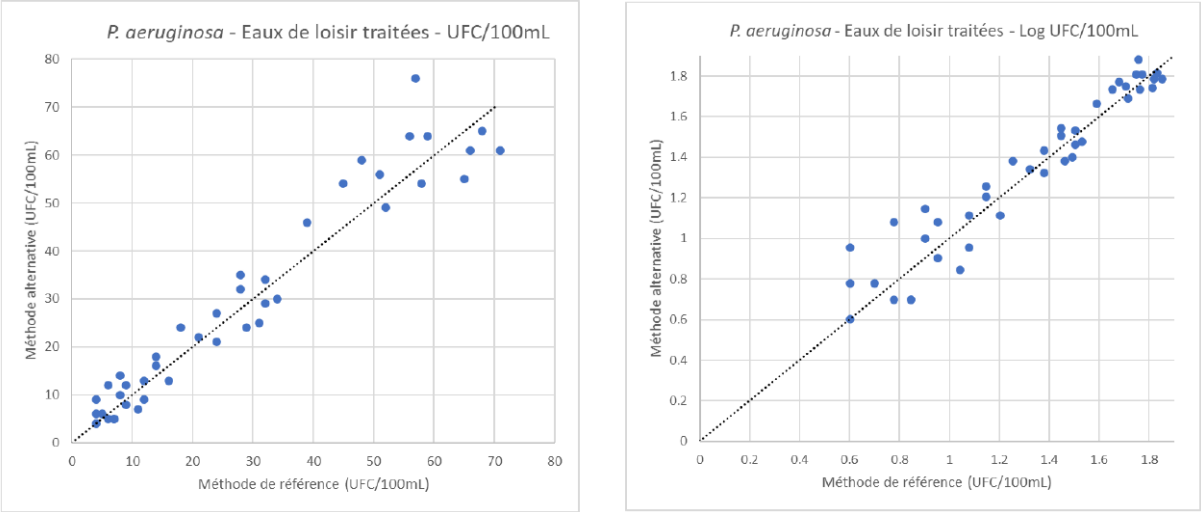


Figure 3 : two-bidimensional graphs for relative accuracy in CFU /100 mL and log CFU / 100 mL for treated recreational water (2021 - AdGène Laboratoire)

3.1.1.3 Statistical analysis

Interpretations were managed according to the EN ISO 16140 (2003) standard. The relationship of relative accuracy 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 drawn from raw results obtained by experimentation, y representing the alternative method and x the reference method.

There is a perfect accuracy (or there is no systematic bias) between the two methods if this equation is equal to the theoretical 'y = x' equation, which applies in the ideal model where the two methods behave similarly.

The intercept "a" is theoretically zero in this ideal model (Hypothesis [a=0]). We check that the value 0 is included in the confidence interval of the intercept constructed around the estimated a value. The test is two-tailed for a risk α = 0.05. If the inequality t(α/2 ;ν) ≤ ttest ≤ t(α/2 ;ν) holds, we accept the hypothesis that a=0.

The slope "b" is theoretically equal to 1 in the ideal model (Hypothesis [b=1]). We check that the value of 1 is within the confidence interval of the steering coefficient constructed around the estimated b value. The test is two-tailed for a risk α = 0.05. If the inequality t(α/2 ;ν) ≤ ttest ≤ t(α/2 ;ν) holds, we accept the hypothesis that b=1.

The linear regression method is chosen over the value of the robustness of the ratio R of overall repeatability standard deviation:

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

Table 2: statistical data of the equations of the regression lines for the human consumption water category (2012 - ADRIA Développement & 2021 - AdGène Laboratoire)

Category	Rob R	Regression used	T_{crit}	a	t(a)	b	t(b)	$-T_{crit}<t(a)<T_{crit}$	$-T_{crit}<t(b)<T_{crit}$
Water for human consumption UFC/250 mL	1.250	GMFR	2.021	0.856	-0.768	0.934	2.050	Oui	Non
Water for human consumption log UFC/250 mL	1.031	GMFR	2.021	0.054	-1.018	0.950	1.295	Oui	Oui

Table 3: Bias and repeatability for both methods for the human consumption water category (2012 - ADRIA Développement & 2021 AdGène Laboratoire))

Category	Bias (D)		Standard deviation of repeatability robust		Contamination area
	Mean	Median	Reference method	Alternative method	
Water for human consumption UFC/250 mL	-1.0	-1.5	4.2	5.4	[4 ; 85]
Water for human consumption log UFC/250 mL	-0.015	-0.023	0.08	0.11	[0.602 ; 1.929]

Table 4: Statistical data for the equations of the regression lines for the treated recreational water category (2021 - AdGène Laboratoire)

Category	Rob R	Regression used	T_{crit}	a	t(a)	b	t(b)	$-T_{crit}<t(a)<T_{crit}$	$-T_{crit}<t(b)<T_{crit}$
Treated recreational water UFC/100 mL	0.750	GMFR	2.093	1.088	-0.689	1.001	-0.024	Oui	Oui
Treated recreational water log UFC/100 mL	1.131	GMFR	2.093	0.098	-1.486	0.944	1.161	Oui	Oui

Table 5: Bias and repeatability for both methods for the treated recreational water category (2021 - AdGène Laboratoire)

Category	Bias (D)		Standard deviation of repeatability robust		Contamination area
	Mean	Median	Reference method	Alternative method	
Treated recreational water UFC/100 mL	1.1	0.5	3.7	3.7	[4 ; 76]
Treated recreational water log UFC/100 mL	0.025	0.015	0.07	0.08	[0.602 ; 1.881]

3.1.1.4 Conclusion

The bias between the alternative method and the reference method is low and is respectively:

- -0.023log CFU/250mL for the human consumption water category
- 0.015log CFU/100mL for the treated recreational water category

The regression line equations are respectively:

- log (Alt) = 0.950log (Ref) + 0.054 for the water for human consumption category
- log (Alt) = 0.972log (Ref) + 0.061 for the treated recreational water category

The standard deviations of repeatability between the alternative and reference methods are very close.

Statistical tests validate the accuracy of the alternative method by validating the hyptothesis that a is equal to 0 and b is equal to 1 for a risk α=0.05 for the water for human consumption and treated recreational water categories.

The relative accuracy of the RAPID'*P. aeruginosa* Agar method is **satisfactory**.

3.1.2 Linearity

The linearity is the ability of the method when used with a given matrix to give results that are in proportion to the amount of analyte present in the sample, that is an increase in analyte corresponds to a linear or proportional increase in results.

3.1.2.1 Matrix used and contamination protocol

For the bottled water category, the following matrix/strain pair was tested: bottled mineral water inoculated with Pseudomonas aeruginosa Ad 1530, isolated from river water. For the human consumption water category, the following matrix/strain pair was tested: well water inoculated with Pseudomonas aeruginosa WDCM 00024. For the treated recreational water category, the following matrix/strain pair was tested: pool water inoculated with Pseudomonas aeruginosa WDCM 00024.
The samples (250 mL or 100 mL) were analyzed in duplicate by the reference and alternative methods.

3.1.2.2 Raw results

Results are presented in appendix 3. A two-dimensional graph is plot with each values obtained with the alternative method (y-axis) and the reference method (x-axis). This graph makes it possible to visually check the presence of abnormal results. The y axis is reserved for the alternative method and the x axis for the reference method.

The representation of a line of equation “y = x“ figures dashed on the graphs.

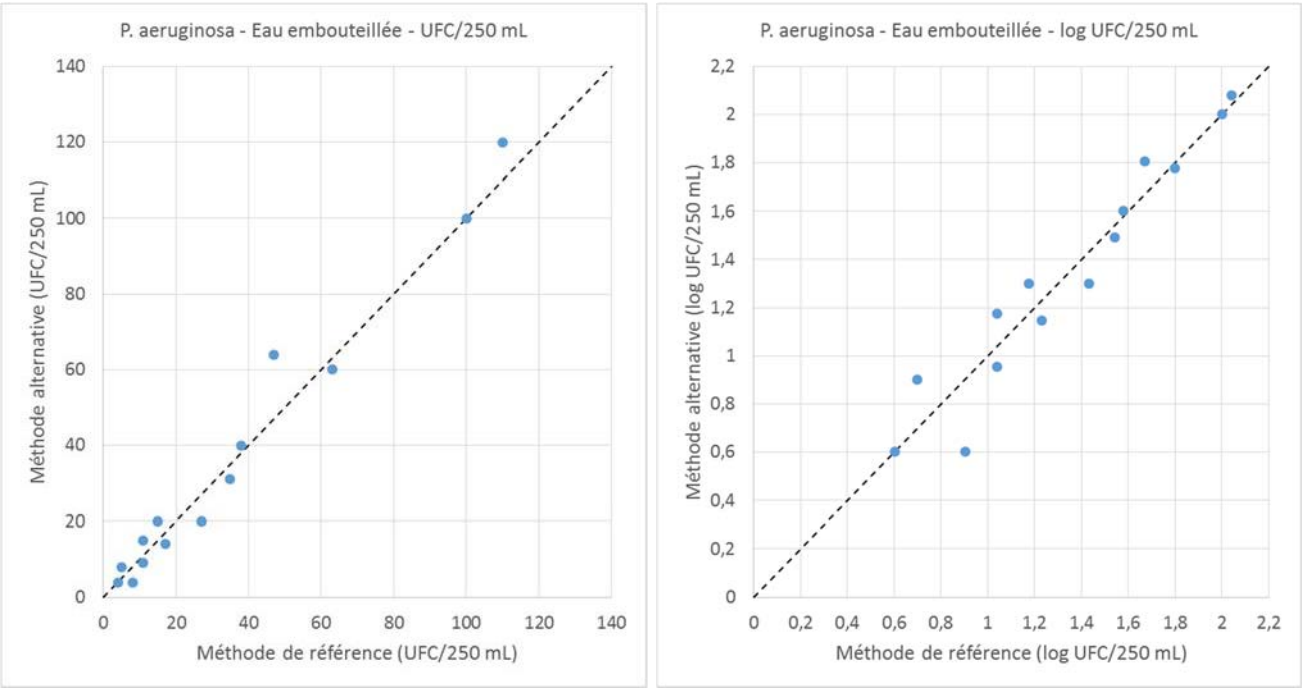


Figure 4 : two-dimensional graph for linearity CFU / 250 mL and in log (CFU / 250 mL) for the bottled water category (2012 - ADRIA Développement)

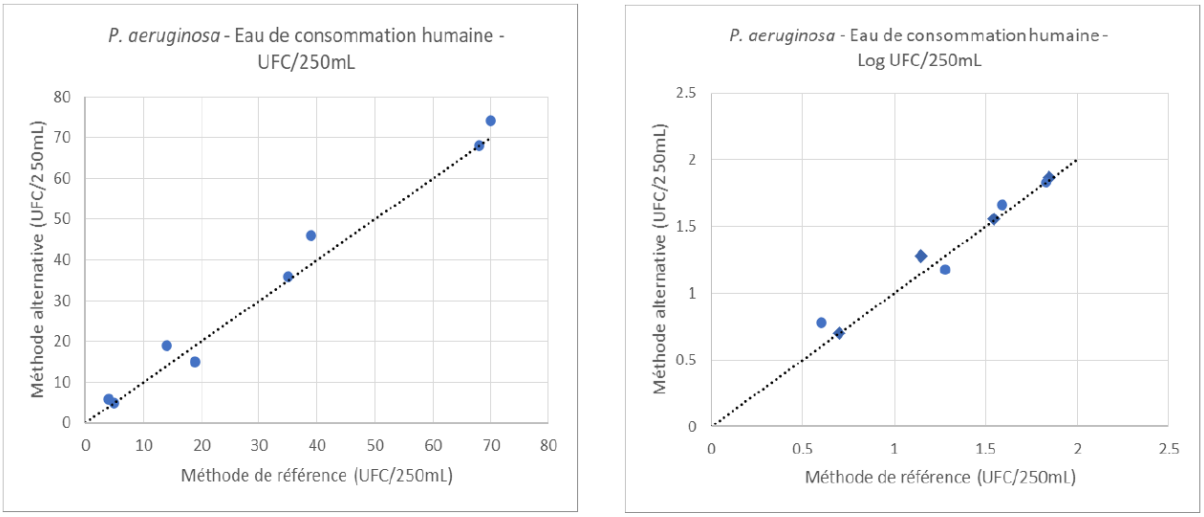


Figure 5 : two-dimensional graph for linearity CFU / 250 mL and in log (CFU / 250 mL) for the water for human consumption category (2021 – AdGène Laboratoire)

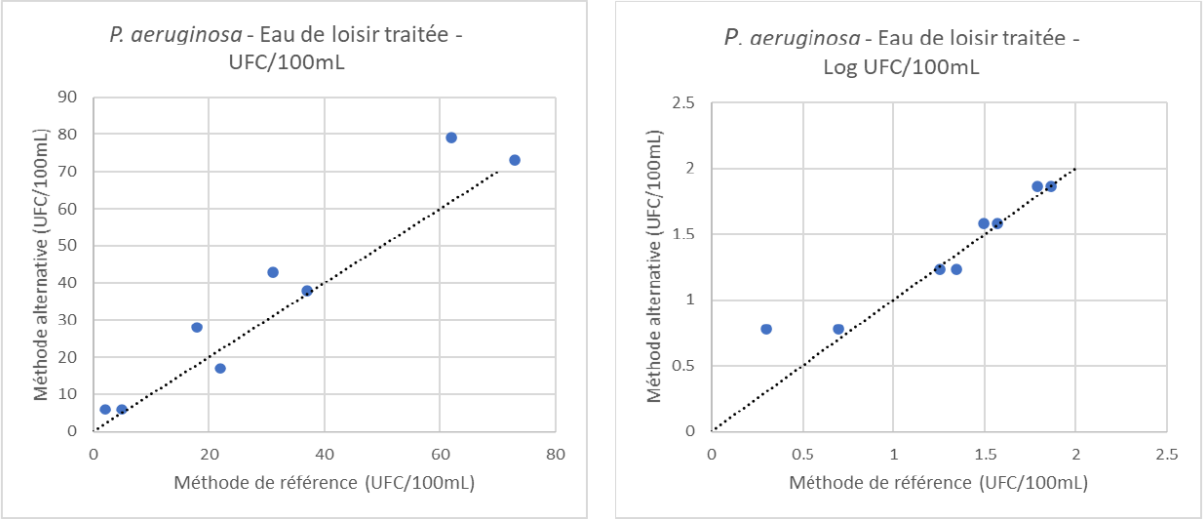


Figure 6 : two-dimensional graph for linearity CFU / 100 mL and in log (CFU / 100 mL) for the treated recreational water category (2021 – AdGène Laboratoire)

3.1.2.3 Statistical analysis

Interpretations were performed according to EN ISO 16140 (2003). The choice of the regression method is made according to the value of the R-ratio. The results of the interpretation are presented in Table 6, 7 and 8.

Results are shown in the following table 6, 7 & 8.

Table 6: statistical data for the linearity for the bottled water category

Mineral spring – bottled water/ *P. aeruginosa*	Rob R	Regression **used**	**F crit.**	$F_{calculated}$	$F<F_{critique}$	**r**	Regression
CFU/250 mL	0,167	OLS2	3,97	123,5	0	0,998	Alt = 0,9 Ref + 1,2
log CFU/250 mL	0,158	OLS2	3,97	0,902	52,9	0,992	logAlt=0,948logRef +0,072

Table 7: statistical data for the linearity for the water for human consumption category

Well water/ *P. aeruginosa*	Rob R	Regression **used**	**F crit.**	$F_{calculated}$	$F<F_{critique}$	**r**	Regression
CFU/250 mL	1.667	GMFR	6.94	1.99	Oui	0.999	Alt = 1.0 Réf + 1.070
log CFU/250 mL	1.264	GMFR	6.94	1.99	Oui	0.999	logAlt=0,945logRéf +0,112

Table 7: statistical data for the linearity for the treated recreational water category

Swimming-pool water/ *P. aeruginosa*	Rob R	Regression **used**	**F crit.**	$F_{calculated}$	$F<F_{critique}$	**r**	Regression
CFU/250 mL	0.700	GMFR	6.94	1.68	Oui	0.986	Alt = 1.0 Réf + 0.9
log CFU/250 mL	0.537	GMFR	6.94	1.74	Oui	0.995	logAlt=0,823log Réf+0,341

The relationship between the 2 methods is linear:

- if $F_{calculated} < F_{critique}$

3.1.2.4 Conclusion

For the human consumption water category, the relationship between the two methods is linear only when the data are expressed in log CFU/250 mL for bottled water. The correlation coefficients of the pair are satisfactory both in CFU/250 mL and in log CFU/250 mL. For well water, the relationship between the two methods is linear whether the results are expressed in CFU/mL or in log/mL with satisfactory correlation coefficients.

For the treated recreational water category, the relationship between the two methods is linear whether the results are expressed in CFU/mL or in log/mL with satisfactory correlation coefficients.

The linearity of the RAPID'*P. aeruginosa* Agar method is ***satisfactory***.

3.1.3 Limit of detection and limit of quantification

The detection limit is the value measured, obtained by a given operating procedure, for which the probability to falsely declare the absence of a constituent in a material is β, given the probability α to falsely declare its presence.

3.1.3.1 Protocol

After bacterial culture of the strain Pseudomonas aeruginosa Ad 1531 isolated from river water, suspension of different concentration was prepared.

Six replications of 250 mL of each suspension were counted on RAPID'PsA agar. Enumerations were carried out in parallel on TCS agar (ten replications for each level).

3.1.3.2 Results

Raw results are shown in appendix 4. Data are summarized in the table 8.

Table 8 : LOD - LOQ values of the alternative method

Parameter	Formula	Values obtained (CFU/ 250 mL)
LC (250 mL)	$1,65\ s_0 + x_0$	2,4
LOD (250 mL)	$3,3\ s_0 + x_0$	4,4
LQD (250 mL)	$10\ s_0 + x_0$	12,2

3.1.3.3 Conclusion

The detection limit is 4,4 CFU/250 mL and the quantification limit is 12,2 CFU/250 mL.

3.1.4 Selectivity

The selectivity of the alternative method is evaluated by its inclusivity and its exclusivity. Inclusivity is the ability of the alternative method to detect the target analyte from a wide range of strains. Exclusivity is the lack of interference by a relevant range of non-target strains with the alternative method.

3.1.4.1 Protocol

Twenty-five target strains and twenty-four non-target strains were analysed in duplicate by the alternative method and the reference method.
Enumeration of the strains were also realized in parallel on TSA agar.

3.1.4.2 Results

Raw results are in appendix 5.

- Inclusivity

Among the twenty five strains tested, one strain (*Pseudomonas aeruginosa* CIP A22) was not detected on RAPID'PsA agar, whereas a growth was observed on CN agar. Incubation was performed for 22h at 36°C.

- Exclusivity

Among the twenty-four strains tested, no growth was observed on RAPID'PsA agar. However, one strain (*Pseudomonas putida* Ad 1585) has grown on CN agar, by giving positive confirmation tests.
The identification of this strain was confirmed by sequencing of 16S rDNA. Incubation was performed for 30h at 36°C.

3.1.4.3 Conclusion

The RAPID'*P. aeruginosa* Agar method is specific and selective.

3.1.5 Practicability

The practicability was evaluated according to the criteria defined by AFNOR. It should be noted that the alternative method presents the same level of performance using the two RAPID'*P.aeruginosa* agar formats available (ready-to-use & dehydrated powder).

1 & 2. Mode of packaging of test components	- RAPID'*P.aeruginosa* Agar pre-poured: 20 Petri dish of 55 mm of 8 to 10 mL - RAPID'*P.aeruginosa* Agar dehydrated powder: bottle of 500 g
3. Storage conditions of components	- Petri dish ready for use should be conserved at 2 – 8° into dark. - Dehydrated media should be conserved at 2 – 8°C in dry place. - Petri dish prepared by the user are conserved 15 day at 2 – 8°C into dark.
4. Modalities after first use	Supercooled media should not be reused.
5. Equipment and specific local requirements	The equipment and premises are those used in a microbiology laboratory.

6. Reagents ready to use or for reconstitution	None.
7. Training period for operator with no experience with the method	The RAPID'*P. aeruginosa* Agar method does not require specific training.
8. Real-time handling and flexibility of the method	Time in minutes for a series of 6 filtrations

Step	Alternative method	Reference method
Filtration	25	25
Reading RAPID'PsA	2	/
Reading plates CN 22H	/	3
48H	/	3
Subculturing on neutral agar	/	5
Subculturing on acetamide broth	/	5
Reading acetamide broth	/	2
Total time	27	43
Time per sample	4,5	7,2

Enumeration of *Pseudomonas aeruginosa* by the RAPID' P. *aeruginosa* Agar method takes 1.6 times less time than the reference method, due to a second reading of the plates for the reference method and the lack of confirmatory tests for the alternative method.

9. Time required for obtaining the results

Step	Alternative method	Reference method
Filtration	J0	J0
1st reading	J1	J1
2nd reading	/	J2
Colonies isolation	/	J2
Confirmation tests Inoculation Reading	/	 J3 J4

The deadline for obtaining results with the alternative method is 22 to 30 h. The deadline for obtaining results with the reference method is 48 h or 4 days if confirmation tests are necessary.

10. Operator qualification type	It is identical to the reference method
11. Phases shared with the reference method	Only the filtration step is identical
12. Traceability of the analysis results	Traceability commonly used in laboratory
13. Laboratory maintenance	None.

3.2 Interlaboratory study

3.2.1 Study organisation

3.2.1.1 Participating laboratories

Nineteen laboratories participated in the laboratory study.

3.2.1.2 Matrix and strain used

The study focused on bottled mineral water, inoculated by Pseudomonas aeruginosa Ad 1528 isolated from river water.

3.2.1.3 Inoculation

The matrix was inoculated with the target strain suspension to obtain 4 contamination levels:

- 0 CFU/250 mL
- 1 à 10 CFU/250 mL
- 10 à 50 CFU/250 mL
- 50 à 100 CFU/250 mL.

The samples were distributed at the rate of 600 mL and in bottles thus allowing the realization of two filtration of 250 mL. The bottles were inoculated individually.
Therefore, each laboratory received 8 bottles for analysis by the reference method and the alternative method (2 bottles per level).
An additional bottle (25 mL) has been provided for the total viable counts at 22°C and 36°C by the reference method ISO 6222.

3.2.1.4 Samples labelling and expedition

Labelled samples (a letter to identify the laboratory and a number to identify each sample) were inoculated and shipped, Monday, February 20, 2012, in insulated boxes for reception at Day1 or Day2.

3.2.1.5 Elements necessary for the performance of tests by collaborating laboratories

The reagents necessary for the implementation of the alternative method and the reference method were supplied by the company BIO-RAD. Detailed instructions have been sent to the collaborating laboratory by the expert laboratory.

3.2.1.6 Analysis

The collaborating laboratories and the expert laboratory analysed the samples by the reference method (ISO 16266) and the alternative method (RAPID'PsA) at Day2.

3.2.2 Verification of experimental parameters

3.2.2.1 Stability of the strain during transport

In order to check the stability of the strain *Pseudomonas aeruginosa* Ad 1528, 6 samples (3 levels of contamination x2 samples) were enumerated after 24h and 48h of storage at 2–8°C. Three trials were realized. Results are shown in table 2 and figure 3.

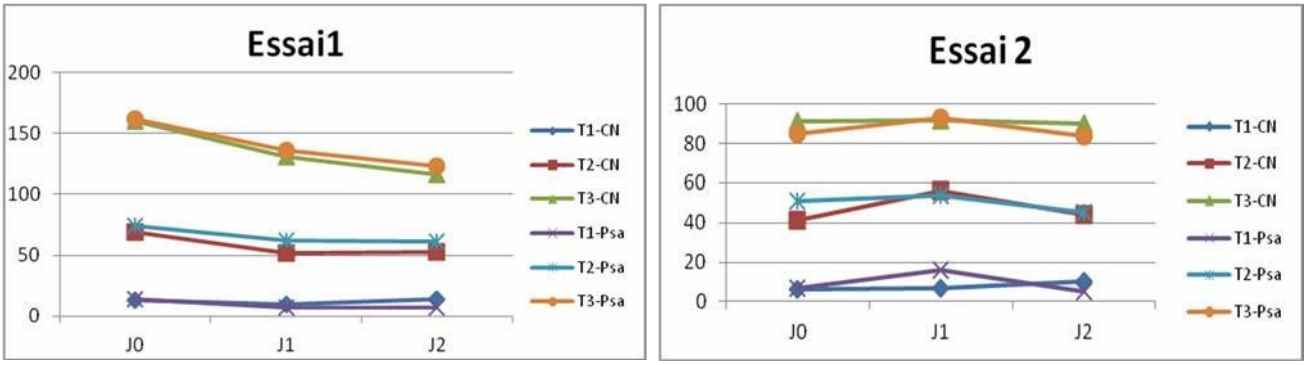
It should be noted that the cold room used for carrying out the pre-tests is regulated at 4°C ± 2°C. The same water supplier was used during the pre-tests and the study interlaboratory.

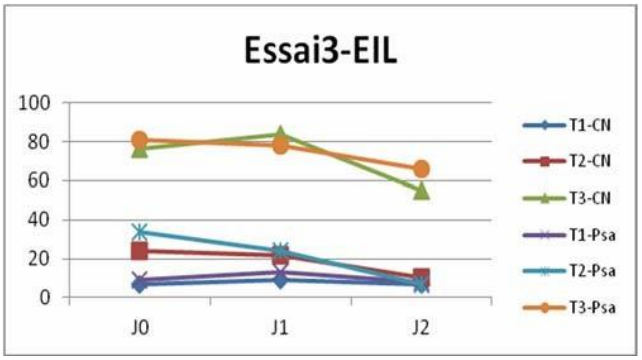
Table 9 : Pseudomonas aeruginosa enumeration by the reference method ISO16266 and the alternative method RAPID'PsA in CFU/250 mL ((…) : mean value)

Test	Contamination level	Reference method ISO 16266			Alternative method RAPID'PsA		
		J0	**J1**	J2	J0	J1	J2
1	1	11 14 (13)	13 7 (10)	10 18 (14)	15 13 (14)	6 8 (7)	10 4 (7)
	2	70 67 (69)	51 72 (62)	53 53 (53)	70 78 (74)	62 62 (62)	68 54 (61)
	3	171 149 (160)	133 128 (131)	105 127 (116)	180 143 (162)	137 134 (136)	127 119 (123)
2	1	6	7	8 12 (10)	7	16	3 7 (5)
	2	41	56	45 42 (44)	51	54	39 50 (45)
	3	91	92	94 86 (90)	85	93	85 82 (24)
3	1	8 5 (7)	7 11 (9)	9 4 (7)	6 11 (9)	12 14 (13)	6 10 (8)
	2	31 17 (24)	25 19 (22)	12 8 (10)	36 31 (34)	22 26 (24)	6 7 (7)
(EIL)	3	72 79 (76)	81 86 (84)	52 57 (55)	81 80 (81)	66 89 (78)	76 55 (66)

A slight drop in the level of contamination is observed after two days of storage at 2 – 8°C.
This decrease was more significant for level 2 when carrying out the interlaboratory study (test 3).

Figure 7 : Graphic representation (in log CFU/250 mL) of strain stability monitoring.





3.2.2.2 Temperature of the samples upon reception

The temperature readings at reception are shown in table 7.

Table 10: Temperature readings at reception

Laboratories	Temperature measured by the thermal probe (°C)	Temperature measured upon reception by the laboratory	Day and hour of reception	
A	4,0	6,9	22/02/2012	14h30
B	*Delivered package at Day2, but not delivered to recipients*		/	/
C	2,0	3,6	21/02/2012	15h00
D	2,0	3,2	21/02/2012	15h00
E	5,5	4,5	21/02/2012	11h15
F	4,5	2,6	21/02/2012	11h30
G	1,0	0,3	22/02/2012	16h20
H	*Thermal probe not reveived*	6,8	21/02/2012	13h55
I	1,5	4,8	21/02/2012	13h55
J	1,5	5,0	21/02/2012	10h00
K	*Defective thermal probe*	2,5	21/02/2012	15h30
L	1,5	7,1	21/02/2012	15h00
M	1,5	8,0	21/02/2012	10h20
N	4,5	7,4	21/02/2012	16h47
O	5,0	6,0	22/02/2012	11h30
P	1,0	4,0	22/02/2012	10h30
Q	1,0	6,0	22/02/2012	11h00
R	1,0	5,6	22/02/2012	13h30
S	6,5	7,5	21/02/2012	13h35

3.2.2.3 Conclusion

The 12 laboratories received their packages at Day1 (21/02/2012) and 6 laboratories at Day2 (22/02/2012). The laboratory B did not receive its package on time and therefore could not perform the analyses. All laboratories performed the analyses except laboratory B.

All temperatures recorded upon reception, as well as temperatures recorded during transport and during storage, were correct. Laboratory D reported that the thermal probe was initially put in an envelope for shipping rather than being stored with the samples. The thermal probe was returned with the samples at the end of storage as indicated by the temperature curve.
The day of writing of the interlaboratory study report, a thermal probe had not yet been received (laboratory H).
A thermal probe gave a recording with aberrant temperature values (laboratory K) but the temperature measured upon reception for this laboratory was correct (2.5 ° C).

3.2.3 Analysis results

3.2.3.1 Total viable counts

Enumeration of the total viable counts vary between < 4 and 630 CFU/mL at 22°C and < 1 to 100 CFU/mL at 36°C.

3.2.3.2 Enumeration of *Pseudomonas aeruginosa*

Raw data are shown in appendix 6.
For the reference method (ISO 16266), all of the colonies counted were green to blue and therefore did not require the use of confirmatory tests; the results presented in the table correspond to a 48 h incubation

The laboratory P reported that 2 samples (P2 and P4) had lost some fluid.

A summary of the results is presented in table 11.

Table 11: Summary of results

Laboratoire	Niveau 0				Niveau 1				Niveau 2				Niveau 3			
	Méthode de référence		Méthode alternative		Méthode de référence		Méthode alternative		Méthode de référence		Méthode alternative		Méthode de référence		Méthode alternative	
	Rep1	Rep2	Rep1	Rep2	Rep1	Rep2	Rep1	Rep2	Rep1	Rep2	Rep1	Rep2	Rep1	Rep2	Rep1	Rep2
A	<1	<1	<1	<1	2	8	7	4	7	7	12	9	53	62	55	51
C	<1	<1	<1	<1	5	8	3	5	12	6	16	14	57	59	63	54
D	<1	<1	<1	<1	6	4	4	5	9	6	11	16	44	50	58	58
E	<1	<1	<1	<1	4	9	3	5	8	7	5	12	53	49	59	47
F	<1	<1	<1	<1	2	9	4	4	11	16	13	10	59	50	62	62
G	<1	<1	<1	<1	1	6	5	4	10	20	8	5	58	57	56	56
H	<1	<1	<1	<1	2	3	3	7	<1	4	1	6	19	31	33	27
I	<1	<1	<1	<1	2	4	4	1	11	10	15	7	58	65	64	50
J	<1	<1	<1	<1	6	7	4	5	9	8	10	9	63	61	62	57
K	<1	<1	<1	<1	3	3	9	8	14	13	8	13	53	54	47	61
L	<1	<1	<1	<1	5	6	5	3	10	12	10	12	50	58	55	52
M	<1	<1	<1	<1	15	7	9	2	11	12	9	11	45	52	47	56
N	<1	<1	<1	<1	4	2	5	1	9	9	11	12	54	69	64	80
O	<1	<1	<1	<1	3	2	9	3	10	10	7	14	38	35	47	48
P	<1	<1	<1	<1	3	3	2	3	15	15	12	4	59	59	59	59
Q	<1	<1	<1	<1	5	6	8	4	10	11	6	21	59	54	56	56
R	<1	<1	<1	<1	7	10	5	5	8	6	9	8	54	51	52	57
S	<1	<1	<1	<1	3	1	6	2	11	4	3	4	58	56	52	48
ADRIA	<1	<1	<1	<1	9	4	6	10	12	8	6	7	52	57	76	55

Résultats de dénombrement : < 4 colonies/boîte
Résultats non pris en compte dans l'interprétation

3.2.3.3 Interpretation

The calculated target values correspond to the target values during inoculation (table 12):

Table 12: Comparison of target values and calculated target values

Target values during inoculation log CFU/250mL	Calculated target values log CFU/250 mL
0 à 1,00	0,65
1,00 à 1,70	1,00
1,70 à 2,00	1,74

A laboratory (H) obtained weak results for levels 2 and 3, with, among other things, the absence of colonies for one of the replications of the reference method. As a result, these results were not retained for interpretation. For some laboratories, the enumeration results for level 1 were found to be less than 4 colonies per Petri dish (13 results for the reference method and 9 results for the alternative method).

Interpretation has however been made taking these results into account, although taking these numbers into account results in greater heterogeneity of results.

A graphical representation of the results observed by the 17 laboratories is given in Figure 5 in log CFU / 250 mL.

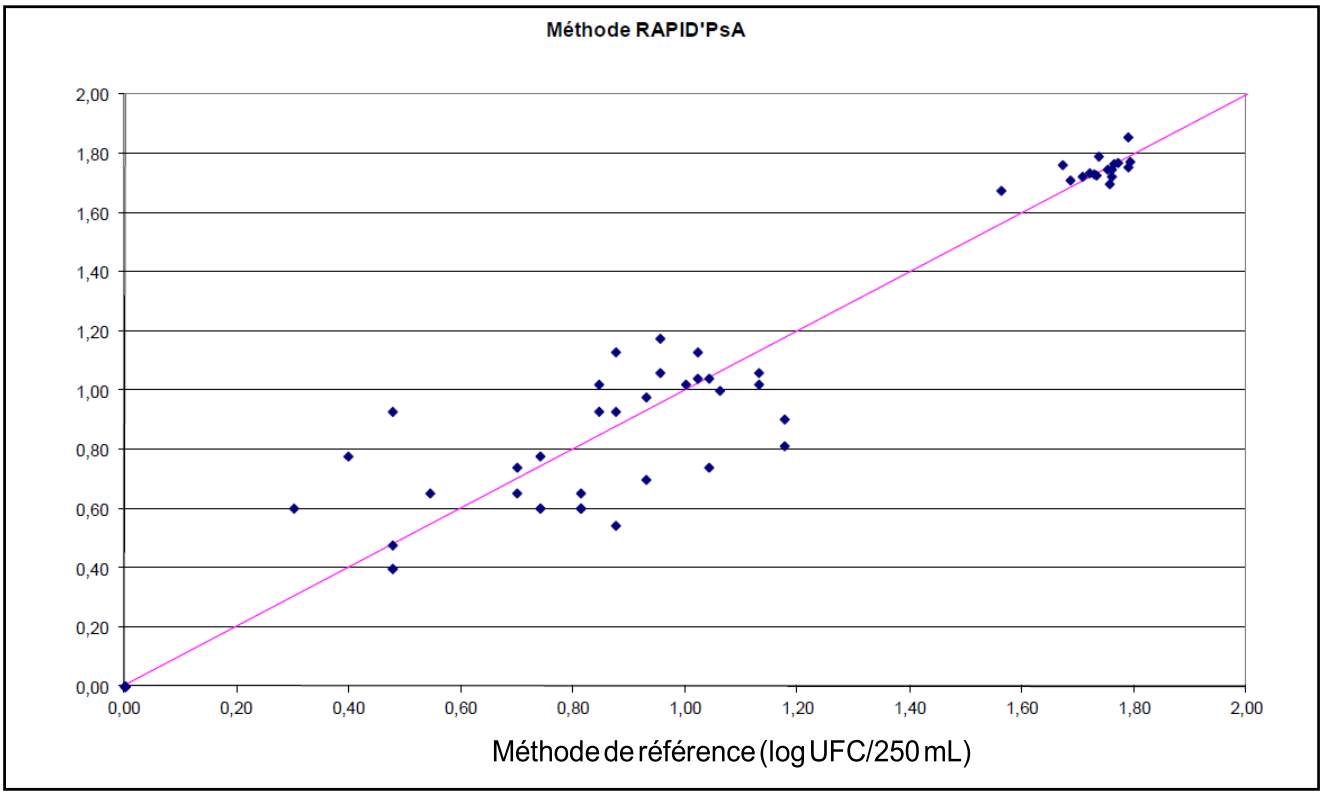


Figure 8: Results in log CFU/250 mL observed by the collaborative laboratories

Table 12 shows the target value, the mean, the relative bias and the bias of each level of contamination for the alternative method.

Table 13:Calculation of the alternative method bias

Contamination level	Low	Medium	High
Target value (log CFU/250 mL)	0,651	1,000	1,740
Average	0,608	0,971	1,747
Relative bias	- 6,46%	- 2,88%	0,37%
Bias	- 0,042	- 0,029	0,006

The bias observed vary between – 0,042 to 0,006 log CFU/250 mL according to inoculation levels. The bias observed during the comparative study of methods was – 0,025 log CFU/250 mL.

Table 14 and table 15 show the values of tolerance and the tolerance limits of the alternative method for a probability value of tolerance of β=80% and of β=90%, data presented respectively in CFU/250 mL and log CFU/250 mL.

Table 14: Values and tolerance limits in CFU/250 mL

	Levels	Low	Medium	High
β=80%	Low tolerance value	1,6	4,9	47,2
	High tolerance value	7,5	15,5	65,2
	Low tolerance limit (difference)	36 %	49 %	86 %
	High tolerance limit (difference)	168 %	155 %	119 %
β=90%	Low tolerance value	0,8	3,3	44,5
	High tolerance value	8,4	17,0	67,9
	Low tolerance limit (difference)	17 %	33 %	81 %
	High tolerance limit (difference)	187 %	170 %	123 %

Table 15: Values and tolerance limits in log CFU/250 mL

	Levels	Low	Medium	High
β=80%	Low tolerance value	0,279	0,717	1,680
	High tolerance value	0,938	1,226	1,814
	Low tolerance limit (difference)	- 0,371	- 0,283	- 0,061
	High tolerance limit (difference)	0,287	0,226	0,073
β=90 %	Low tolerance value	0,183	0,642	1,660
	High tolerance value	1,034	1,300	1,834
	Low tolerance limit (difference)	- 0,468	- 0,358	- 0,080
	High tolerance limit (difference)	0,384	0,300	0,093

Figure 9, 10, 11 and 12 show the accuracy profiles using respectively a probability value of tolerance of β=80% and of β=90%.

Data are presented respectively in CFU/250 mL and in log CFU/250 mL.

Figure 9 : Accuracy profile in CFU/250 mL (β = 80 %)

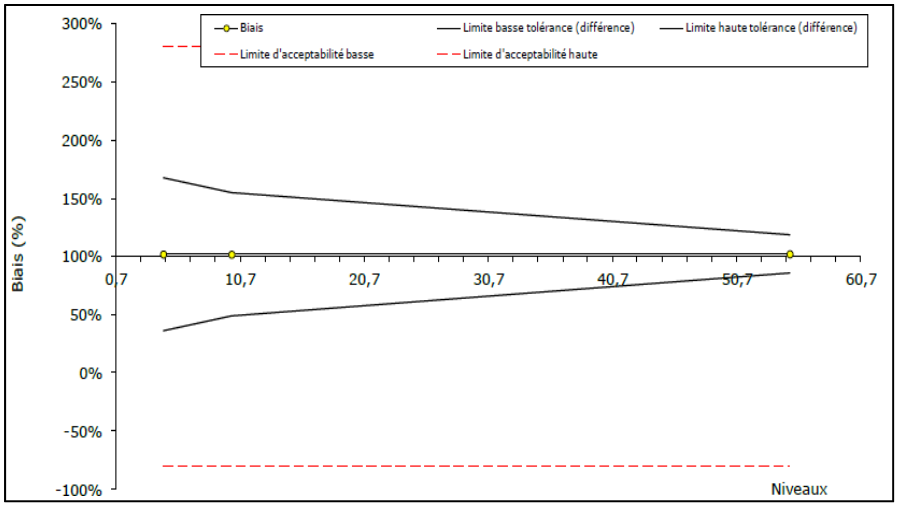


Figure 11 : Accuracy profile in CFU/250 mL (β = 90 %)

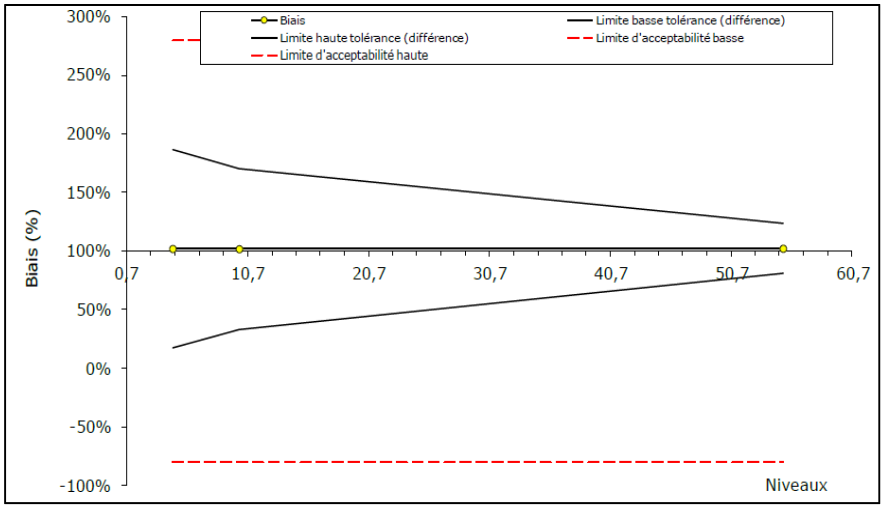


Figure 10 : Accuracy profile in log CFU/250mL (β = 80 %)

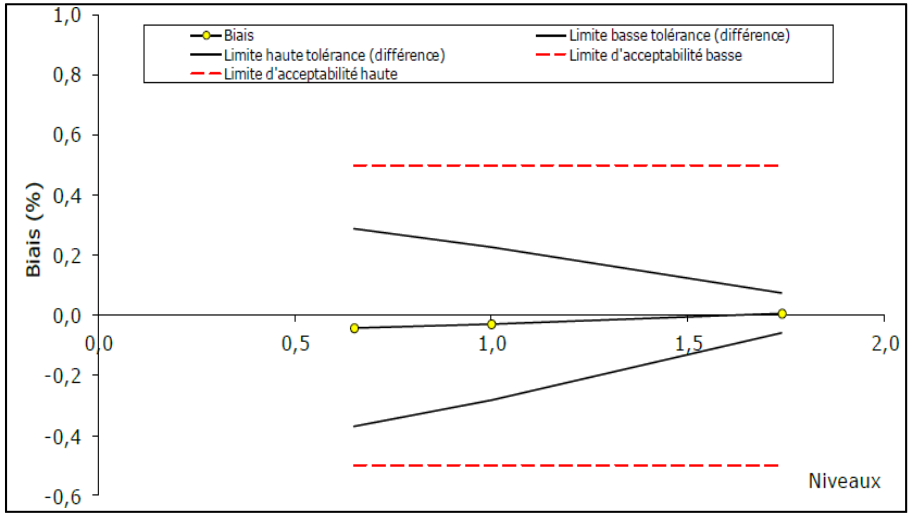
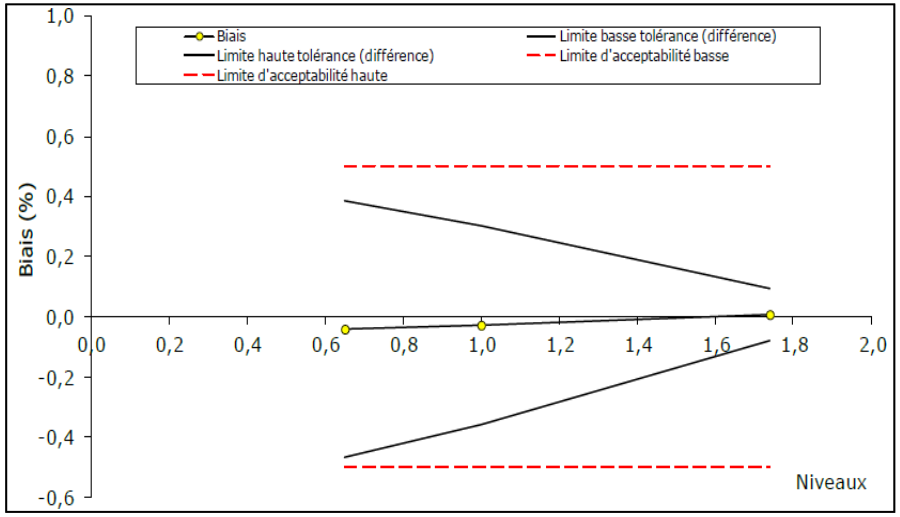


Figure 12 : Accuracy profile in log CFU/250 mL (β = 90 %)



4 Conclusion

The conclusions of the comparative study of the methods are as follows:

- The linearity and relative accuracy of the RAPID'*P. aeruginosa* Agar method are satisfactory.
- The bias between the two methods is:
  - - 0.023log CFU/250mL for the human consumption water category
  - - 0.015log CFU/100mL for the treated recreational water category
- The repeatability standard deviations of the reference and alternative methods are similar.
- The specificity and selectivity of the method are satisfactory.
- The alternative method exhibits the same level of performance using both available RAPID'*P.aeruginosa* agar formats (ready-to-use & dehydrated powder).

The conclusions of the interlaboratory study are:

- The bias between the ISO 16266 reference method and the alternative RAPID'*P. aeruginosa* Agar method is low and ranges from - 0.042 log CFU/250 mL to + 0.006 log CFU/250 mL.
- Accuracy profiles are satisfactory, with an 80% or 90% tolerance value and acceptability limits of 0.5 log.

5 Bibliography

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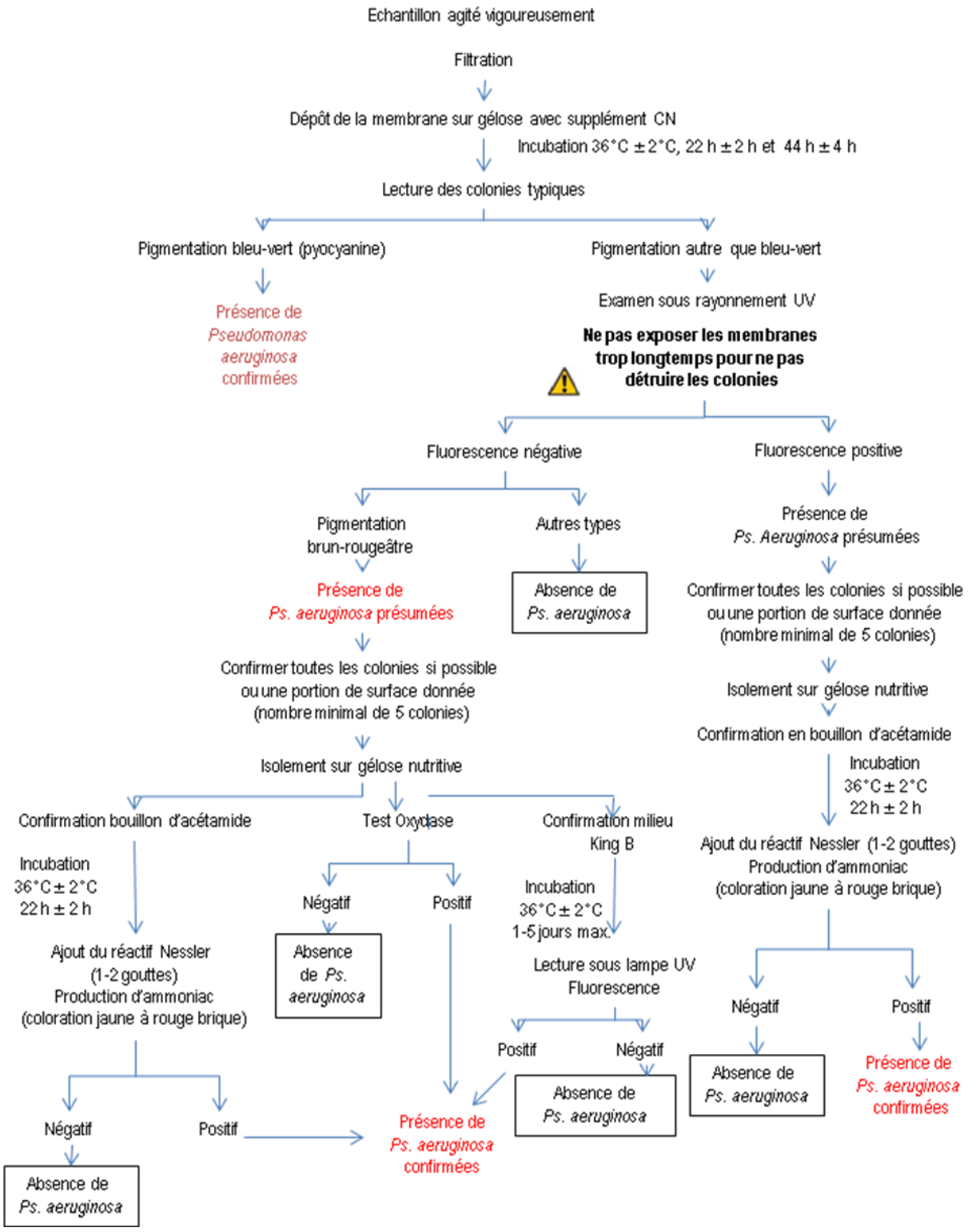
Done at Thury-Harcourt, February 11, 2024
Mickaël MORVAN
Research & Development Engineer

Appendix 1 - Reference method: ISO 16266 (April 2006)

Water quality - Detection and enumeration of *Pseudomonas aeruginosa*
Membrane filtration method



Appendix 2 – Relative accuracy: raw results

Results obtained by ADRIA Développement (2012) – Bottled water

Ne : Estimated number (<10 colonies)

N° éch.	Produit	Méthode de référence NF EN ISO 16266 ◆								Méthode alternative RAPID'PsA			
		UFC dénombrées / 250ml		UFC confirmées / 250ml		UFC / 250ml		**log UFC / 250ml**		UFC/ 250ml		**log UFC/250ml**	
		Répétition 1	Répétition 2	Répétition 1	Répétition 2	Répétition 1	Répétition 2	**Répétition 1**	**Répétition 2**	Répétition 1	Répétition 2	**Répétition 1**	**Répétition 2**
4624	**Eau minérale naturelle embouteillée**	35	41	35	41	35	41	**1,54**	**1,61**	49	44	**1,69**	**1,64**
4672	**Eau minérale naturelle embouteillée**	46	50	46	50	46	50	**1,66**	**1,70**	42	49	**1,62**	**1,69**
4673	**Eau minérale naturelle embouteillée**	13	11	13	11	13	11	**1,11**	**1,04**	6 Ne	14	**0,78 Ne**	**1,15**
4674	**Eau minérale naturelle embouteillée**	26	38	26	38	26	38	**1,41**	**1,58**	32	22	**1,51**	**1,34**
4675	**Eau minérale naturelle embouteillée**	36	29	36	29	36	29	**1,56**	**1,46**	24	36	**1,38**	**1,56**
4676	**Eau minérale naturelle gazeuse embouteillée**	38	31	38	31	38	31	**1,58**	**1,49**	34	28	**1,53**	**1,45**
4677	**Eau minérale naturelle gazeuse embouteillée**	8	11	8	11	8 Ne	11	**0,90 Ne**	**1,04**	12	10	**1,08**	**1,00**
4682	Eau minérale naturelle embouteillée	0	0	0	0	<1	<1	**<0,00**	**<0,00**	<1	<1	**<0,00**	**<0,00**
4683	Eau minérale naturelle embouteillée	0	0	0	0	<1	<1	**<0,00**	**<0,00**	<1	<1	**<0,00**	**<0,00**
4684	Eau minérale naturelle embouteillée	0	0	0	0	<1	<1	**<0,00**	**<0,00**	<1	<1	**<0,00**	**<0,00**
4810	Eau minérale naturelle gazeuse embouteillée	0	0	0	0	<1	<1	**<0,00**	**<0,00**	<1	<1	**<0,00**	**<0,00**
4811	Eau minérale naturelle embouteillée	0	0	0	0	<1	<1	**<0,00**	**<0,00**	<1	<1	**<0,00**	**<0,00**

◆ Essai effectué sous le couvert de l'accréditation

N° éch.	Produit	Méthode de référence NF EN ISO 16266 ◆								Méthode alternative RAPID'PsA			
		UFC dénombrées / 250ml		UFC confirmées / 250ml		UFC / 250ml		**log UFC / 250ml**		UFC/ 250ml		**log UFC/250ml**	
		Répétition 1	Répétition 2	Répétition 1	Répétition 2	Répétition 1	Répétition 2	**Répétition 1**	**Répétition 2**	Répétition 1	Répétition 2	**Répétition 1**	**Répétition 2**
4812	**Eau minérale naturelle embouteillée**	0	0	0	0	<1	<1	**<0,00**	**<0,00**	<1	<1	**<0,00**	**<0,00**
4815	**Eau minérale naturelle des Alpes embouteillée**	24	23	24	23	24	23	**1,38**	**1,36**	24	26	**1,38**	**1,41**
4820	**Eau minérale naturelle embouteillée**	20	15	20	15	20	15	**1,30**	**1,18**	17	19	**1,23**	**1,28**
6067	**Eau minérale naturelle des Alpes embouteillée**	38	44	38	44	38	44	**1,58**	**1,64**	35	34	**1,54**	**1,53**
6069	**Eau minérale naturelle Grande Source embouteillée**	30	23	30	23	30	23	**1,48**	**1,36**	20	20	**1,30**	**1,30**
4621	**Eau de source naturelle embouteillée**	1	3	1	3	<4	<4	**<0,60**	**<0,60**	12	20	**1,08**	**1,30**
4622	**Eau de source naturelle embouteillée**	15	7	15	7	15	7	**1,18**	**0,85 Ne**	6 Ne	15	**0,78 Ne**	**1,18**
4623	**Eau de source naturelle embouteillée**	20	17	20	17	20	17	**1,30**	**1,23**	16	25	**1,20**	**1,40**
4625	Eau de source naturelle embouteillée	0	0	<1	<1	<1	<1	**<0,00**	**<0,00**	<1	<1	**<0,00**	**<0,00**
4681	**Eau de source de montage de Provence embouteillée**	85	70	85	70	85	70	**1,93**	**1,85**	76	71	**1,88**	**1,85**
4813	**Eau de source de montage Pyrénées embouteillée**	35	33	35	33	35	33	**1,54**	**1,52**	23	31	**1,36**	**1,49**
4814	**Eau de source de montage embouteillée**	0	0	0	0	<1	<1	**<0,00**	**<0,00**	<4	<4	**<0,60**	**<0,60**
4816	**Eau de source naturelle embouteillée**	0	0	0	0	<1	<1	**<0,00**	**<0,00**	<1	<1	**<0,00**	**<0,00**

N° éch.	Produit	Méthode de référence NF EN ISO 16266 ◆								Méthode alternative RAPID'PsA			
		UFC dénombrées / 250ml		UFC confirmées / 250ml		UFC / 250ml		**log UFC / 250ml**		UFC/ 250ml		**log UFC/250ml**	
		Répétition 1	Répétition 2	Répétition 1	Répétition 2	Répétition 1	Répétition 2	**Répétition 1**	**Répétition 2**	Répétition 1	Répétition 2	**Répétition 1**	**Répétition 2**
6070	**Eau de source embouteillée**	1	0	1	0	<4	<1	**<0,60**	**<0,00**	<1	<4	**<0,00**	**<0,60**
6071	**Eau de source embouteillée**	0	0	0	0	<1	<1	**<0,00**	**<0,00**	<1	<1	**<0,00**	**<0,00**
6072	**Eau de source embouteillée**	0	0	0	0	<1	<1	**<0,00**	**<0,00**	<1	<1	**<0,00**	**<0,00**
6073	**Eau de source embouteillée**	1	0	1	0	<4	<1	**<0,60**	**<0,00**	<1	<1	**<0,00**	**<0,00**
6074	**Eau de source de Montagne embouteillée**	45	41	45	41	45	41	**1,65**	**1,61**	42	33	**1,62**	**1,52**
6076	**Eau de source naturelle embouteillée**	35	24	35	24	35	24	**1,54**	**1,38**	26	21	**1,41**	**1,32**
6251	**Eau de source de montagne de Provence embouteillée**	15	9	15	9	15	9	**1,18**	**0,95**	18	14	**1,26**	**1,15**
6252	**Eau de source naturelle embouteillée**	0	0	0	0	<1	<1	**<0,00**	**<0,00**	<4	5	**<0,60**	**0,70**
6253	**Eau de source de montagne d'Arrée embouteillée**	2	0	2	0	<4	<1	**<0,60**	**<0,00**	15	15	**1,18**	**1,18**
6254	**Eau de source de montagne Pyrénées embouteillée**	7	4	7	4	7	4	**0,85**	**0,60**	7	12	**0,85**	**1,08**
6255	**Eau de source naturelle embouteillée**	21	17	21	17	21	17	**1,32**	**1,23**	20	18	**1,30**	**1,26**
6256	**Eau de source naturelle embouteillée**	37	31	37	31	37	31	**1,57**	**1,49**	33	39	**1,52**	**1,59**

Exactitude relative - UFC/250 mL

Méthode de référence					Méthode alternative					Différence
Echantillon	Répétition 1	Répétition 2	M	SD	Echantillon	Répétition 1	Répétition 2	M	SD	
1	35	41	38,0	4,2	1	49	44	46,5	3,5	8,5
2	46	50	48,0	2,8	2	42	49	45,5	4,9	-2,5
3	13	11	12,0	1,4	3	6	14	10,0	5,7	-2,0
4	26	38	32,0	8,5	4	32	22	27,0	7,1	-5,0
5	36	29	32,5	4,9	5	24	36	30,0	8,5	-2,5
6	38	31	34,5	4,9	6	34	28	31,0	4,2	-3,5
7	8	11	9,5	2,1	7	12	10	11,0	1,4	1,5
8	24	23	23,5	0,7	8	24	26	25,0	1,4	1,5
9	20	15	17,5	3,5	9	17	19	18,0	1,4	0,5
10	38	44	41,0	4,2	10	35	34	34,5	0,7	-6,5
11	30	23	26,5	4,9	11	20	20	20,0	0,0	-6,5
12	15	7	11,0	5,7	12	6	15	10,5	6,4	-0,5
13	20	17	18,5	2,1	13	16	25	20,5	6,4	2,0
14	85	70	77,5	10,6	14	76	71	73,5	3,5	-4,0
15	35	33	34,0	1,4	15	23	31	27,0	5,7	-7,0
16	45	41	43,0	2,8	16	42	33	37,5	6,4	-5,5
17	35	24	29,5	7,8	17	26	21	23,5	3,5	-6,0
18	15	9	12,0	4,2	18	18	14	16,0	2,8	4,0
19	7	4	5,5	2,1	19	7	12	9,5	3,5	4,0
20	21	17	19,0	2,8	20	20	18	19,0	1,4	0,0
21	37	31	34,0	4,2	21	33	39	36,0	4,2	2,0

q= 21
n= 2
N=qn= 42

Mx= 28,5
MEDx= 29,5
SDbx= 16,5
MEDwx = 4,2
SDwx= 4,8
rob. SDwx= 6,3

My= 27,2
MEDy= 25,0
SDby= 15,3
MEDwy = 3,5
SDwy= 4,5
rob. SDwy= 5,2

M= -1,3
MED= -2,0
Biais

Choix de la méthode
GMFR

R= 0,954
rob. R= 0,833

Sx= 16,650
Sy= 15,414

r= 0,968
b= 0,9
a= 0,8

Res. SEM= 3,947
Res. SD= 5,581

S(b)= 0,053
S(a)= 1,144

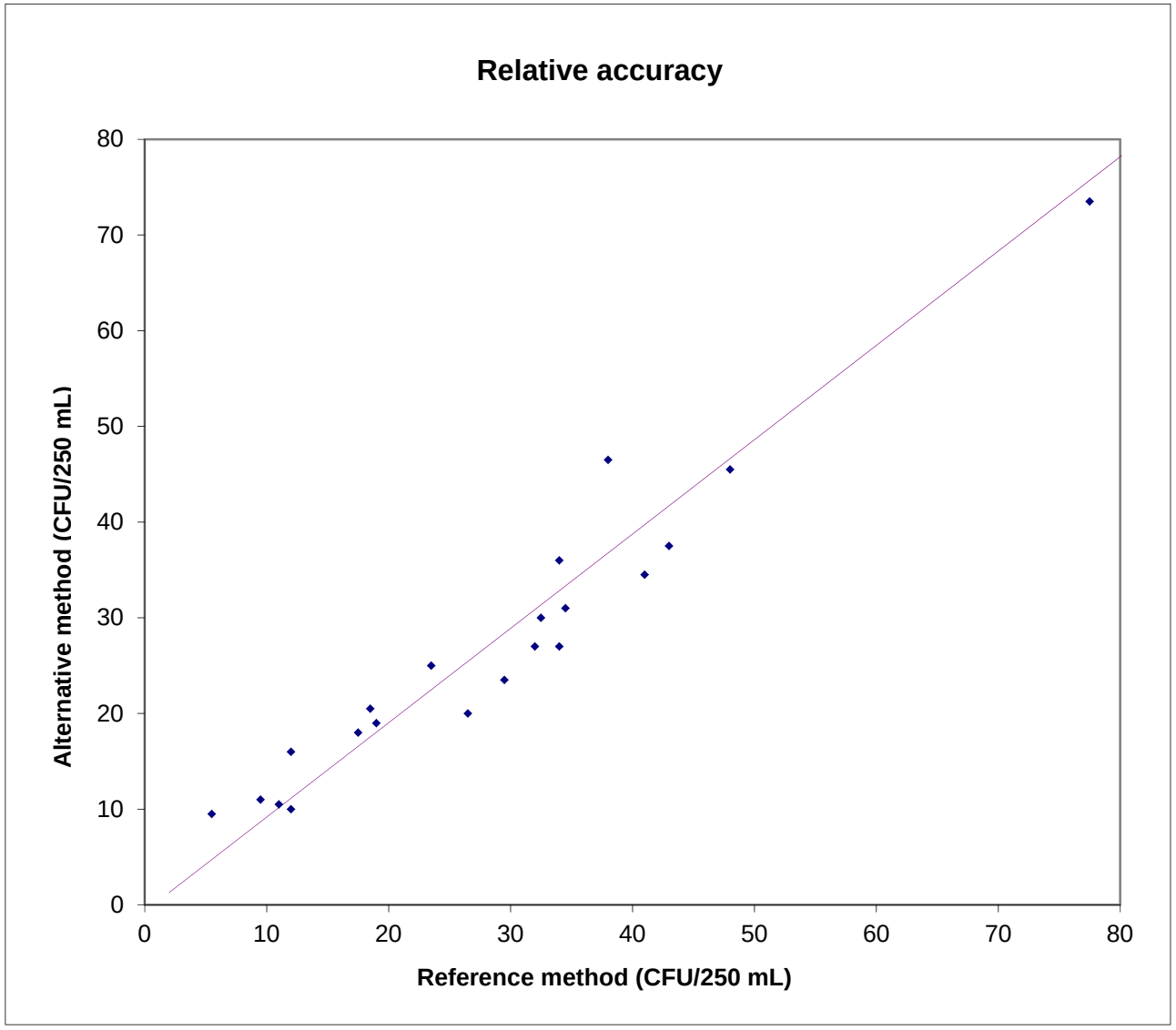
p(t;b=1)= 0,169
p(t;a=0)= 0,484

t(b)= 1,401
t(a)= 0,707

Répétabilité	Méthode de référence	Méthode alternative
r	13,3	12,7
rob. r	17,6	14,7

Est. y	Dév.
35,987	10,513
45,244	0,256
11,917	-1,917
30,432	-3,432
30,895	-0,895
32,747	-1,747
9,603	1,397
22,564	2,436
17,009	0,991
38,764	-4,264
25,341	-5,341
10,992	-0,492
17,935	2,565
72,554	0,946
32,284	-5,284
40,616	-3,116
28,118	-4,618
11,917	4,083
5,900	3,600
18,398	0,602
32,284	3,716

The points represented correspond to the averages repetitions of each sample



Exactitude relative - log UFC/250 mL

Méthode de référence					Méthode alternative					Différence
Echantillon	Répétition 1	Répétition 2	M	SD	Echantillon	Répétition 1	Répétition 2	M	SD	
1	1,544	1,613	1,578	0,049	1	1,690	1,643	1,667	0,033	0,088
2	1,663	1,699	1,681	0,026	2	1,623	1,690	1,657	0,047	-0,024
3	1,114	1,041	1,078	0,051	3	0,778	1,146	0,962	0,260	-0,116
4	1,415	1,580	1,497	0,117	4	1,505	1,342	1,424	0,115	-0,074
5	1,556	1,462	1,509	0,066	5	1,380	1,556	1,468	0,125	-0,041
6	1,580	1,491	1,536	0,063	6	1,531	1,447	1,489	0,060	-0,046
7	0,903	1,041	0,972	0,098	7	1,079	1,000	1,040	0,056	0,067
8	1,380	1,362	1,371	0,013	8	1,380	1,415	1,398	0,025	0,027
9	1,301	1,176	1,239	0,088	9	1,230	1,279	1,255	0,034	0,016
10	1,580	1,643	1,612	0,045	10	1,544	1,531	1,538	0,009	-0,074
11	1,477	1,362	1,419	0,082	11	1,301	1,301	1,301	0,000	-0,118
12	1,176	0,845	1,011	0,234	12	0,778	1,176	0,977	0,281	-0,033
13	1,301	1,230	1,266	0,050	13	1,204	1,398	1,301	0,137	0,035
14	1,929	1,845	1,887	0,060	14	1,881	1,851	1,866	0,021	-0,021
15	1,544	1,519	1,531	0,018	15	1,362	1,491	1,427	0,092	-0,105
16	1,653	1,613	1,633	0,029	16	1,623	1,519	1,571	0,074	-0,062
17	1,544	1,380	1,462	0,116	17	1,415	1,322	1,369	0,066	-0,094
18	1,176	0,954	1,065	0,157	18	1,255	1,146	1,201	0,077	0,136
19	0,845	0,602	0,724	0,172	19	0,845	1,079	0,962	0,166	0,239
20	1,322	1,230	1,276	0,065	20	1,301	1,255	1,278	0,032	0,002
21	1,568	1,491	1,530	0,054	21	1,519	1,591	1,555	0,051	0,025

q= 21
n= 2
N=qn= 42

Mx= 1,375
MEDx= 1,462
SDbx= 0,281
MEDwx = 0,063
SDwx= 0,095
rob. SDwx= 0,093

My= 1,367
MEDy= 1,398
SDby= 0,246
MEDwy = 0,060
SDwy= 0,112
rob. SDwy= 0,088

M= -0,008
MED= -0,024
Biais

Choix de la méthode
GMFR

R= 1,173
rob. R= 0,954

Sx= 0,286
Sy= 0,255

r= 0,952
b= 0,893
a= 0,139

Res. SEM= 0,079
Res. SD= 0,111

S(b)= 0,062
S(a)= 0,130

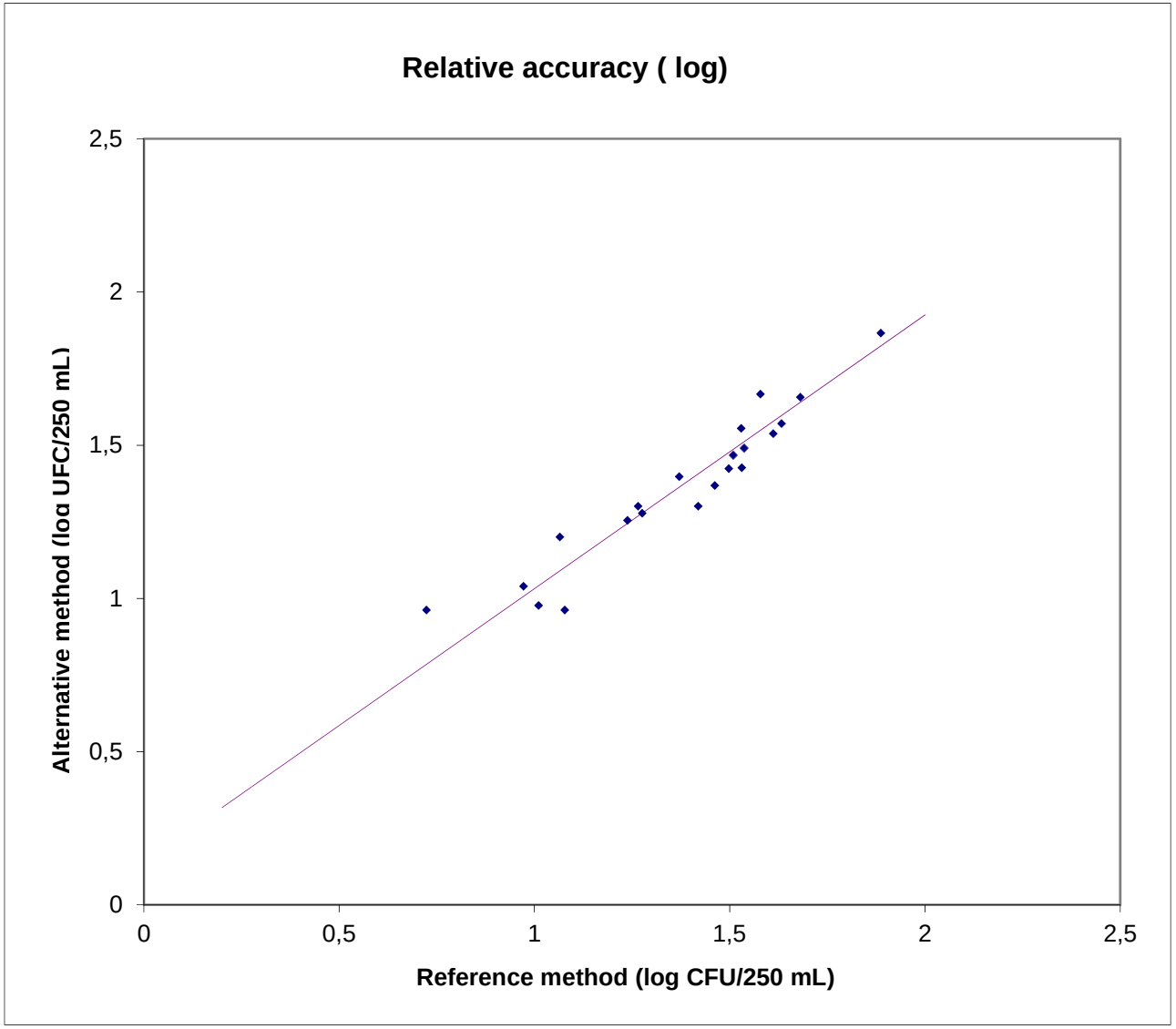
p(t;b=1)= 0,090
p(t;a=0)= 0,291

t(b)= 1,735
t(a)= 1,069

Répétabilité	Méthode de référence	Méthode alternative
r	0,267	0,313
rob. r	0,260	0,248

Est. y	Dév.
1,548	0,118
1,640	0,017
1,101	-0,139
1,476	-0,052
1,487	-0,018
1,510	-0,021
1,007	0,033
1,363	0,034
1,245	0,010
1,578	-0,040
1,406	-0,105
1,041	-0,064
1,269	0,032
1,824	0,042
1,506	-0,080
1,597	-0,026
1,445	-0,076
1,090	0,111
0,785	0,177
1,279	0,000
1,505	0,050

The points represented correspond to the averages repetitions of each sample



Results obtained by AdGène Laboratoire (2021) – Water for human consumption

N° échan.	Produit	Méthode de référence NF EN ISO 16266*						Méthode alternative RAPID'PsA			
		UFC dénombrées / 250 mL		UFC confirmées / 250 mL		log UFC	log UFC	UFC	UFC	log UFC	log UFC
		Répétition 1	Répétition 2	Répétition 1	Répétition 2	Répétition 1	Répétition 2	Répétition 1	Répétition 2	Répétition 1	Répétition 2
E05	Eau de puits (Evrecy)	31	39	31	39	**1.49**	**1.59**	27	32	**1.43**	**1.51**
E02	Eau de puits (Evrecy)	0	1	0	1	**<0**	**0.00**	0	0	**<0**	**<0**
E08	Eau de puits (Soliers)	7	4	7	4	**0.85**	**0.60**	5	2	**0.70**	**0.30**
E04	Eau de puits (Cairon)	41	52	41	52	**1.61**	**1.72**	59 △	48 △	**1.77**	**1.68**
E09	Eau de puits (Cagny)	0	0	0	0	**<0**		1	0	**0.00**	**<0**
E07	Eau de puits (Giberville)	4	3	4	3	**0.60**	**0.48**	4	5	**0.60**	**0.70**
E03	Eau de puits (Soliers)	7	11	7	11	**0.85**	**1.04**	9	6	**0.95**	**0.78**
E06	Eau de puits (Cairon)	11	15	11	15	**1.04**	**1.18**	13	11	**1.11**	**1.04**
E01	Eau de puits (Cagny)	18	21	18	21	**1.26**	**1.32**	15 △	11 △	**1.18**	**1.04**
F01	Eau de fontaine (Le Hom)	71	78	71	78	**1.85**	**1.89**	76	66	**1.88**	**1.82**
F03	Eau de fontaine (St Goazec)	62	59	62	59	**1.79**	**1.77**	51	58	**1.71**	**1.76**
F04	Eau de fontaine (Laz)	32	28	32	28	**1.51**	**1.45**	25 **△**	31 **△**	**1.40**	**1.49**
F08	Eau de fontaine (Lanvenegen)	1	2	1	2	**0.00**	**0.30**	2	2	**0.30**	**0.30**
F07	Eau de fontaine (Lanvenegen)	7	9	7	9	**0.85**	**0.95**	8 △	9 △	**0.90**	**0.95**
F06	Eau de fontaine (Laz)	14	16	14	16	**1.15**	**1.20**	15	12	**1.18**	**1.08**
F05	Eau de fontaine (Hérouville)	28	34	28	34	**1.45**	**1.53**	32 △	27 △	**1.51**	**1.43**
F02	Eau de fontaine (Treffrin)	27	25	27	25	**1.43**	**1.40**	28	22	**1.45**	**1.34**
ER02	Eau de réseau (Le Hom)	15	14	15	14	**1.18**	**1.15**	17	12	**1.23**	**1.08**
ER01	Eau de réseau (Le Hom)	6	5	6	5	**0.78**	**0.70**	5	5	**0.70**	**0.70**
ER04	Eau de réseau (Tréméven)	32	39	32	39	**1.51**	**1.59**	38	35	**1.58**	**1.54**
ER05	Eau de réseau (Tréméven)	11	9	11	9	**1.04**	**0.95**	13 △	7 △	**1.11**	**0.85**
ER07	Eau de réseau (Hérouville)	1	2	1	2	**0.00**	**0.30**	1	1	**0.00**	**0.00**
ER06	Eau de réseau (Hérouville)	56	61	56	61	**1.75**	**1.79**	55	49	**1.74**	**1.69**
ER08	Eau de réseau (AdGène Laboratoire)	41	35	41	35	**1.61**	**1.54**	45	42	**1.65**	**1.62**
ER09	Eau de réseau (AdGène Laboratoire)	75	69	75	69	**1.88**	**1.84**	68	71	**1.83**	**1.85**

*** Test performed under the cover of accreditation**

△ Tests carried out with RAPID'P.aeruginosa Agar dehydrated medium (the other tests were carried out with the ready-to-use medium)

in red: results excluded from statistical analysis in accordance with NF EN ISO 8199 (<4 colonies; >80 colonies)

Relative accuracy – Human consumption water – CFU/250 mL including the data of 2012 & 2021

Méthode de référence					Méthode alternative					
Echantillon	Répétition 1	Répétition 2	M	SD	Echantillon	Répétition 1	Répétition 2	M	SD	Différence
1	31	39	35.0	5.7	1	27	32	29.5	3.5	-5.5
2	7	4	5.5	2.1	2	5	2	3.5	2.1	-2.0
3	41	52	46.5	7.8	3	59	48	53.5	7.8	7.0
4	4	3	3.5	0.7	4	4	5	4.5	0.7	1.0
5	7	11	9.0	2.8	5	9	6	7.5	2.1	-1.5
6	11	15	13.0	2.8	6	13	11	12.0	1.4	-1.0
7	18	21	19.5	2.1	7	15	11	13.0	2.8	-6.5
8	71	78	74.5	4.9	8	76	66	71.0	7.1	-3.5
9	62	59	60.5	2.1	9	51	58	54.5	4.9	-6.0
10	32	28	30.0	2.8	10	25	31	28.0	4.2	-2.0
11	7	9	8.0	1.4	11	8	9	8.5	0.7	0.5
12	14	16	15.0	1.4	12	15	12	13.5	2.1	-1.5
13	28	34	31.0	4.2	13	32	27	29.5	3.5	-1.5
14	27	25	26.0	1.4	14	28	22	25.0	4.2	-1.0
15	15	14	14.5	0.7	15	17	12	14.5	3.5	0.0
16	6	5	5.5	0.7	16	5	5	5.0	0.0	-0.5
17	32	39	35.5	4.9	17	38	35	36.5	2.1	1.0
18	11	9	10.0	1.4	18	13	7	10.0	4.2	0.0
19	56	61	58.5	3.5	19	55	49	52.0	4.2	-6.5
20	41	35	38.0	4.2	20	45	42	43.5	2.1	5.5
21	75	69	72.0	4.2	21	68	71	69.5	2.1	-2.5
22	35	41	38.0	4.2	22	49	44	46.5	3.5	8.5
23	46	50	48.0	2.8	23	42	49	45.5	4.9	-2.5
24	13	11	12.0	1.4	24	6	14	10.0	5.7	-2.0
25	26	38	32.0	8.5	25	32	22	27.0	7.1	-5.0
26	36	29	32.5	4.9	26	24	36	30.0	8.5	-2.5
27	38	31	34.5	4.9	27	34	28	31.0	4.2	-3.5
28	8	11	9.5	2.1	28	12	10	11.0	1.4	1.5
29	24	23	23.5	0.7	29	24	26	25.0	1.4	1.5
30	20	15	17.5	3.5	30	17	19	18.0	1.4	0.5
31	38	44	41.0	4.2	31	35	34	34.5	0.7	-6.5
32	30	23	26.5	4.9	32	20	20	20.0	0.0	-6.5
33	15	7	11.0	5.7	33	6	15	10.5	6.4	-0.5
34	20	17	18.5	2.1	34	16	25	20.5	6.4	2.0
35	85	70	77.5	10.6	35	76	71	73.5	3.5	-4.0
36	35	33	34.0	1.4	36	23	31	27.0	5.7	-7.0
37	45	41	43.0	2.8	37	42	33	37.5	6.4	-5.5
38	35	24	29.5	7.8	38	26	21	23.5	3.5	-6.0
39	15	9	12.0	4.2	39	18	14	16.0	2.8	4.0
40	7	4	5.5	2.1	40	7	12	9.5	3.5	4.0
41	21	17	19.0	2.8	41	20	38	29.0	12.7	10.0
42	37	31	34.0	4.2	42	33	39	36.0	4.2	2.0

q= 42
n= 2
N=qn= 84

Mx= 28.8
MEDx= 28.0
SDbx= 19.4

MEDwx= 2.8
SDwx= 4.2
rob.SDwx= 4.2

My= 28.0
MEDy= 26.0
SDby= 19.0

MEDwy= 3.5
SDwy= 5.4
rob.SDwy= 5.2

M= -1.0
MED= -1.5

Choix de la méthode

GMFR

R= 1.305
rob.R= 1.250

Sx= 19.50
Sy= 18.71

r= 0.977
b= 0.934
a= 0.856

Res. SEM= 4.003
Res.SD= 5.662

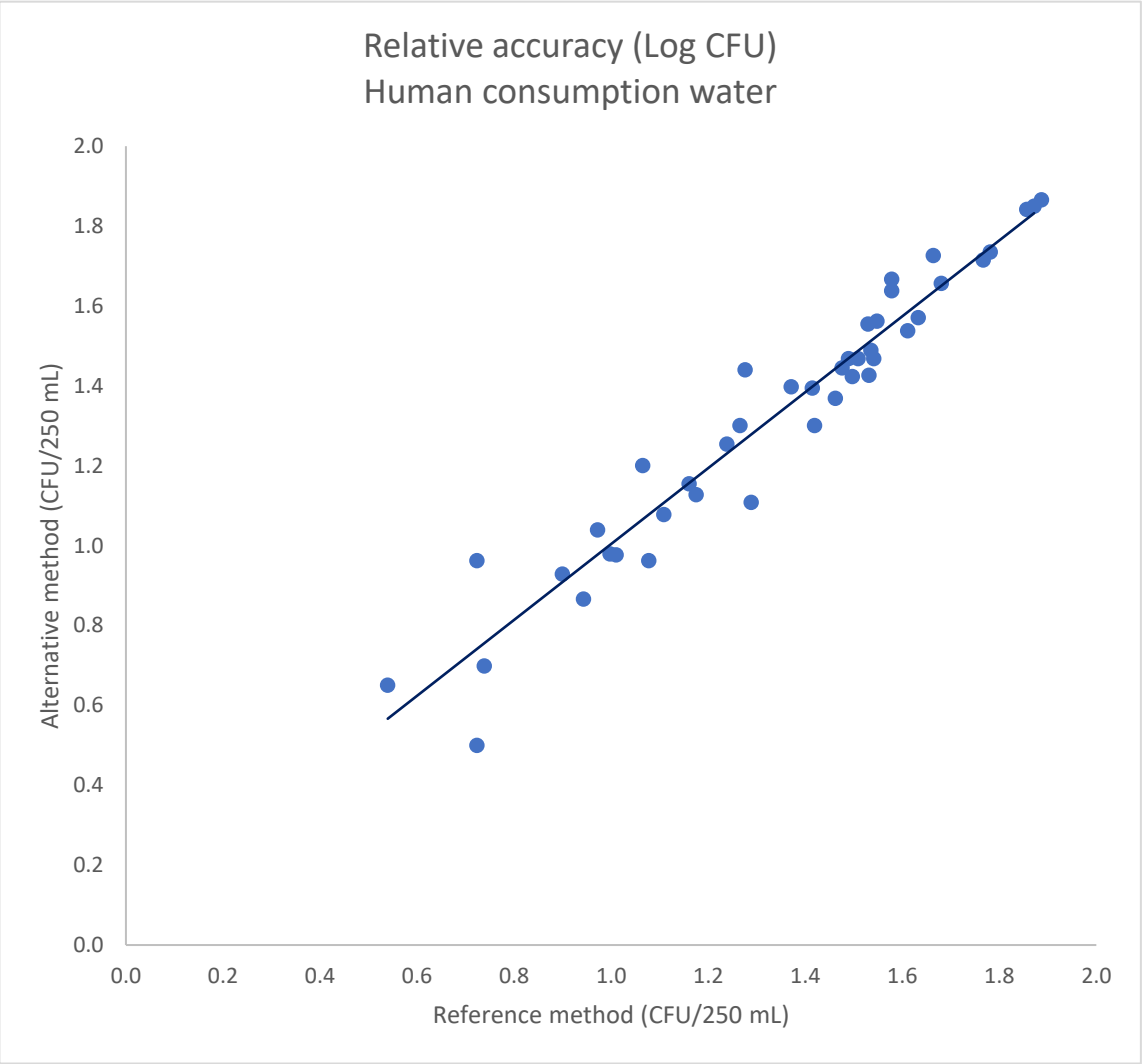
S(b)= 0.032
S(a)= 1.115

t(b)= 2.050
t(a)= -0.768

2.050>2.021 **Hypothèse b=1 non validé**
-2.021**<-0.768**<2.021 **Hypothèse a=0 validé**

Est. y	Dév.
33.5	4.0
6.0	2.5
44.3	-9.2
4.1	-0.4
9.3	1.8
13.0	1.0
19.1	6.1
70.4	-0.6
57.4	2.9
28.9	0.9
8.3	-0.2
14.9	1.4
29.8	0.3
25.1	0.1
14.4	-0.1
6.0	1.0
34.0	-2.5
10.2	0.2
55.5	3.5
36.3	-7.2
68.1	-1.4
36.3	-10.2
45.7	0.2
12.1	2.1
30.7	3.7
31.2	1.2
33.1	2.1
9.7	-1.3
22.8	-2.2
17.2	-0.8
39.2	4.7
25.6	5.6
11.1	0.6
18.1	-2.4
73.2	-0.3
32.6	5.6
41.0	3.5
28.4	4.9
12.1	-3.9
6.0	-3.5
18.6	-10.4
32.6	-3.4

The points represented correspond to the averages repetitions of each sample



Relative accuracy – Human consumption water – log CFU/250 mL including the data of 2012 & 2021

Méthode de référence					Méthode alternative					
Echantillon	Répétition 1	Répétition 2	M	SD	Echantillon	Répétition 1	Répétition 2	M	SD	Différence
1	1.491	1.591	1.541	0.071	1	1.431	1.505	1.468	0.052	-0.073
2	0.845	0.602	0.724	0.172	2	0.699	0.301	0.500	0.281	-0.224
3	1.613	1.716	1.664	0.073	3	1.771	1.681	1.726	0.063	0.062
4	0.602	0.477	0.540	0.088	4	0.602	0.699	0.651	0.069	0.111
5	0.845	1.041	0.943	0.139	5	0.954	0.778	0.866	0.125	-0.077
6	1.041	1.176	1.109	0.095	6	1.114	1.041	1.078	0.051	-0.031
7	1.255	1.322	1.289	0.047	7	1.176	1.041	1.109	0.095	-0.180
8	1.851	1.892	1.872	0.029	8	1.881	1.820	1.850	0.043	-0.021
9	1.792	1.771	1.782	0.015	9	1.708	1.763	1.735	0.039	-0.046
10	1.505	1.447	1.476	0.041	10	1.398	1.491	1.445	0.066	-0.032
11	0.845	0.954	0.900	0.077	11	0.903	0.954	0.929	0.036	0.029
12	1.146	1.204	1.175	0.041	12	1.176	1.079	1.128	0.069	-0.047
13	1.447	1.531	1.489	0.060	13	1.505	1.431	1.468	0.052	-0.021
14	1.431	1.398	1.415	0.024	14	1.447	1.342	1.395	0.074	-0.020
15	1.176	1.146	1.161	0.021	15	1.230	1.079	1.155	0.107	-0.006
16	0.778	0.699	0.739	0.056	16	0.699	0.699	0.699	0.000	-0.040
17	1.505	1.591	1.548	0.061	17	1.580	1.544	1.562	0.025	0.014
18	1.041	0.954	0.998	0.062	18	1.114	0.845	0.980	0.190	-0.018
19	1.748	1.785	1.767	0.026	19	1.740	1.690	1.715	0.035	-0.051
20	1.613	1.544	1.578	0.049	20	1.653	1.623	1.638	0.021	0.060
21	1.875	1.839	1.857	0.026	21	1.833	1.851	1.842	0.013	-0.015
22	1.544	1.613	1.578	0.049	22	1.690	1.643	1.667	0.033	0.088
23	1.663	1.699	1.681	0.026	23	1.623	1.690	1.657	0.047	-0.024
24	1.114	1.041	1.078	0.051	24	0.778	1.146	0.962	0.260	-0.116
25	1.415	1.580	1.497	0.117	25	1.505	1.342	1.424	0.115	-0.074
26	1.556	1.462	1.509	0.066	26	1.380	1.556	1.468	0.125	-0.041
27	1.580	1.491	1.536	0.063	27	1.531	1.447	1.489	0.060	-0.046
28	0.903	1.041	0.972	0.098	28	1.079	1.000	1.040	0.056	0.067
29	1.380	1.362	1.371	0.013	29	1.380	1.415	1.398	0.025	0.027
30	1.301	1.176	1.239	0.088	30	1.230	1.279	1.255	0.034	0.016
31	1.580	1.643	1.612	0.045	31	1.544	1.531	1.538	0.009	-0.074
32	1.477	1.362	1.419	0.082	32	1.301	1.301	1.301	0.000	-0.118
33	1.176	0.845	1.011	0.234	33	0.778	1.176	0.977	0.281	-0.033
34	1.301	1.230	1.266	0.050	34	1.204	1.398	1.301	0.137	0.035
35	1.929	1.845	1.887	0.060	35	1.881	1.851	1.866	0.021	-0.021
36	1.544	1.519	1.531	0.018	36	1.362	1.491	1.427	0.092	-0.105
37	1.653	1.613	1.633	0.029	37	1.623	1.519	1.571	0.074	-0.062
38	1.544	1.380	1.462	0.116	38	1.415	1.322	1.369	0.066	-0.094
39	1.176	0.954	1.065	0.157	39	1.255	1.146	1.201	0.077	0.136
40	0.845	0.602	0.724	0.172	40	0.845	1.079	0.962	0.166	0.239
41	1.322	1.230	1.276	0.065	41	1.301	1.580	1.440	0.197	0.164
42	1.568	1.491	1.530	0.054	42	1.519	1.591	1.555	0.051	0.025

q= 42
n= 2
N=qn= 84

Mx= 1.344
MEDx= 1.441
SDbx= 0.342

MEDwx= 0.060
SDwx= 0.084
rob.SDwx= 0.088

My= 1.329
MEDy= 1.411
SDby= 0.338

MEDwy= 0.061
SDwy= 0.114
rob.SDwy= 0.091

M= -0.015
MED= -0.023

Choix de la méthode

GMFR

R= 1.351
rob.R= 1.031

Sx= 0.345
Sy= 0.345

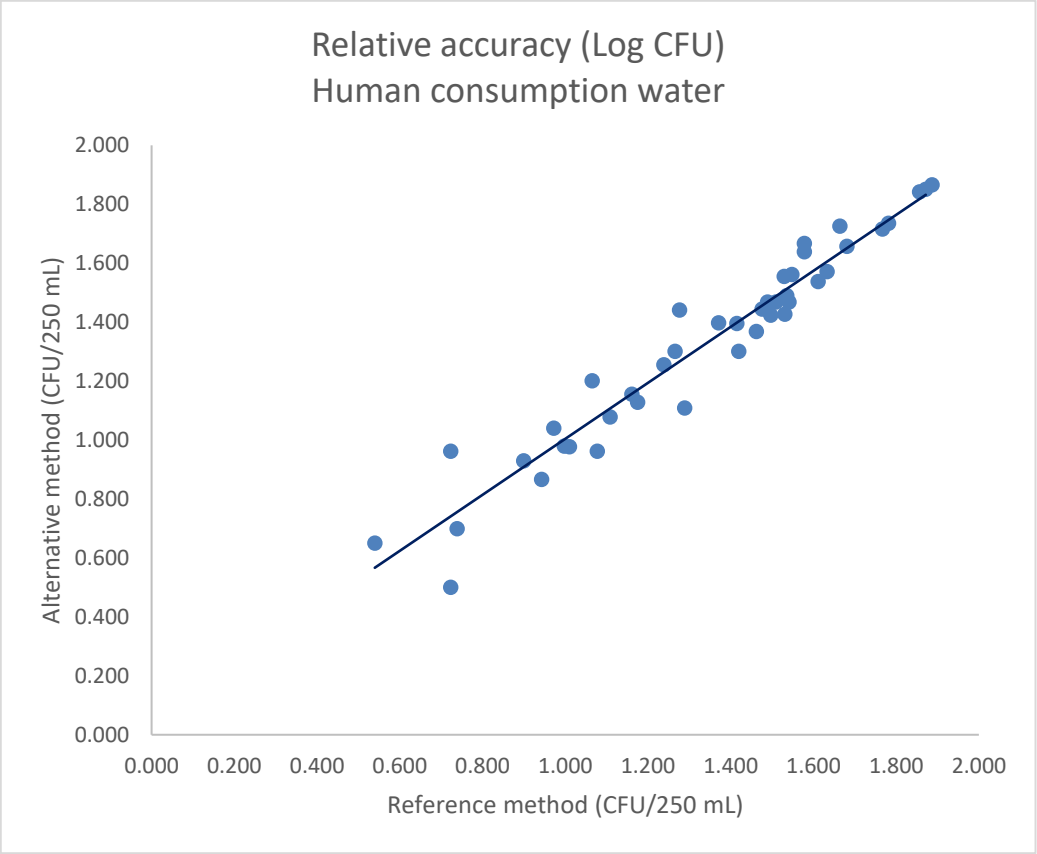
r= 0.968
b= 0.950
a= 0.054

Res. SEM= 0.086
Res.SD= 0.121

S(b)= 0.038 **t(b)=** 1.295 -2.021**<1.295**<2.021 **Hypothèse b=1 validé**
S(a)= 0.053 **t(a)=** -1.018 -2.021**<-1.018**<2.021 **Hypothèse a=0 validé**

Est. y	Dév.
1.518	0.050
0.741	0.241
1.635	-0.091
0.567	-0.084
0.950	0.084
1.107	0.030
1.278	0.170
1.832	-0.018
1.747	0.011
1.456	0.012
0.909	-0.020
1.170	0.043
1.469	0.001
1.398	0.003
1.157	0.002
0.756	0.057
1.525	-0.037
1.002	0.022
1.732	0.017
1.554	-0.085
1.818	-0.024
1.554	-0.113
1.651	-0.006
1.078	0.116
1.477	0.053
1.488	0.020
1.513	0.023
0.978	-0.062
1.356	-0.041
1.231	-0.024
1.585	0.047
1.402	0.101
1.014	0.037
1.256	-0.045
1.847	-0.019
1.509	0.082
1.605	0.034
1.443	0.074
1.066	-0.135
0.741	-0.221
1.267	-0.174
1.507	-0.047

The points represented correspond to the averages repetitions of each sample



Results obtained by AdGène Laboratoire (2021) – Treated recreational water

N° échan.	Produit	Méthode de référence NF EN ISO 16266*						Méthode alternative RAPID'PsA			
		UFC dénombrées / 100 mL		UFC confirmées / 100 mL		log UFC	log UFC	UFC	UFC	log UFC	log UFC
		Répétition 1	Répétition 2	Répétition 1	Répétition 2	Répétition 1	Répétition 2	Répétition 1	Répétition 2	Répétition 1	Répétition 2
TH01	Eau thermale (Luc-sur-mer)	4	4	4	4	**0.60**	**0.60**	9 △	4 △	**0.95**	**0.60**
TH02	Eau thermale (Luc-sur-mer)	0	0	0	0	**<0**	**<0**	0	0	**<0**	**<0**
TH03	Eau thermale (Luc-sur-mer)	57	68	57	68	**1.76**	**1.83**	76	65	**1.88**	**1.81**
TH08	Eau thermale (Cabourg)	51	58	51	58	**1.71**	**1.76**	56 △	54 △	**1.75**	**1.73**
TH11	Eau thermale (Cabourg)	24	29	24	29	**1.38**	**1.46**	27	24	**1.43**	**1.38**
TH05	Eau thermale (Luc-sur-mer)	11	12	11	12	**1.04**	**1.08**	7	9	**0.85**	**0.95**
TH04	Eau thermale (Luc-sur-mer)	5	7	5	7	**0.70**	**0.85**	6	5	**0.78**	**0.70**
TH06	Eau thermale (Luc-sur-mer)	28	34	28	34	**1.45**	**1.53**	32	30	**1.51**	**1.48**
TH09	Eau thermale (Cabourg)	9	8	9	8	**0.95**	**0.90**	12 △	14 △	**1.08**	**1.15**
TH07	Eau thermale (Luc-sur-mer)	14	12	14	12	**1.15**	**1.08**	16	13	**1.20**	**1.11**
TH12	Eau thermale (Cabourg)	82	85	82	85	**1.91**	**1.93**	79	95	**1.90**	**1.98**
TH10	Eau thermale (Cabourg)	31	24	31	24	**1.49**	**1.38**	25	21	**1.40**	**1.32**
PT01	Eau de piscine traitée (Hérouville)	39	32	39	32	**1.59**	**1.51**	46	34	**1.66**	**1.53**
PT06	Eau de piscine traitée (Carpiquet)	8	6	8	6	**0.90**	**0.78**	10 △	12 △	**1.00**	**1.08**
PT02	Eau de piscine traitée (Hérouville)	83	91	83	91	**1.92**	**1.96**	94	78	**1.97**	**1.89**
PT03	Eau de piscine traitée (Hérouville)	4	7	4	7	**0.60**	**0.85**	6	5	**0.78**	**0.70**
PT07	Eau de piscine traitée (Colombelles)	6	9	6	9	**0.78**	**0.95**	5	8	**0.70**	**0.90**
PT10	Eau de piscine traitée (Valdallière)	1	2	1	2	**0.00**	**0.30**	1 △	2 △	**0.00**	**0.30**
PT08	Eau de piscine traitée (Hermanville)	56	48	56	48	**1.75**	**1.68**	64	59	**1.81**	**1.77**
PT11	Eau de piscine traitée (Caen)	94	86	94	86	**1.97**	**1.93**	79	91	**1.90**	**1.96**
PT12	Eau de piscine traitée (Caen)	71	65	71	65	**1.85**	**1.81**	61	55	**1.79**	**1.74**
PT04	Eau de piscine traitée (Quimperlé)	14	16	14	16	**1.15**	**1.20**	18 △	13 △	**1.26**	**1.11**
PT05	Eau de piscine traitée (Scaër)	66	59	66	59	**1.82**	**1.77**	61	64	**1.79**	**1.81**
PT09	Eau de piscine traitée (Leuhan)	32	28	32	28	**1.51**	**1.45**	29 △	35 △	**1.46**	**1.54**
PT06	Eau de piscine traitée (Fouesnant)	52	45	52	45	**1.72**	**1.65**	49	54	**1.69**	**1.73**
PT13	Eau de piscine traitée (Valdallière)	21	18	21	18	**1.32**	**1.26**	22	24	**1.34**	**1.38**

*** Test performed under the cover of accreditation**

△ Tests carried out with RAPID'*P.aeruginosa* Agar dehydrated medium (the other tests were carried out with the ready-to-use medium)

In red: results excluded from statistical analysis in accordance with NF EN ISO 8199 (<4 colonies; >80 colonies)

Relative accuracy – Treated recreational water – CFU/100 mL

Méthode de référence				
Echantillon	Répétition 1	Répétition 2	M	SD
1	4	4	4.0	0.0
2	57	68	62.5	7.8
3	51	58	54.5	4.9
4	24	29	26.5	3.5
5	11	12	11.5	0.7
6	5	7	6.0	1.4
7	28	34	31.0	4.2
8	9	8	8.5	0.7
9	14	12	13.0	1.4
10	31	24	27.5	4.9
11	39	32	35.5	4.9
12	8	6	7.0	1.4
13	4	7	5.5	2.1
14	6	9	7.5	2.1
15	56	48	52.0	5.7
16	71	65	68.0	4.2
17	14	16	15.0	1.4
18	66	59	62.5	4.9
19	32	28	30.0	2.8
20	52	45	48.5	4.9
21	21	18	19.5	2.1

Méthode alternative				
Echantillon	Répétition 1	Répétition 2	M	SD
1	9	4	6.5	3.5
2	76	65	70.5	7.8
3	56	54	55.0	1.4
4	27	24	25.5	2.1
5	7	9	8.0	1.4
6	6	5	5.5	0.7
7	32	30	31.0	1.4
8	12	14	13.0	1.4
9	16	13	14.5	2.1
10	25	21	23.0	2.8
11	46	34	40.0	8.5
12	10	12	11.0	1.4
13	6	5	5.5	0.7
14	5	8	6.5	2.1
15	64	59	61.5	3.5
16	61	55	58.0	4.2
17	18	13	15.5	3.5
18	61	64	62.5	2.1
19	29	35	32.0	4.2
20	49	54	51.5	3.5
21	22	24	23.0	1.4

Différence
2.500
8.000
0.500
-1.000
-3.500
-0.500
0.000
4.500
1.500
-4.500
4.500
4.000
0.000
-1.000
9.500
-10.000
0.500
0.000
2.000
3.000
3.500

q= 21
n= 2
N=qn= 42

Mx= 28.4
MEDx= 26.5
SDbx= 21.6

MEDwx= 2.8
SDwx= 3.7
rob.SDwx= 4.2

My= 29.5
MEDy= 23.0
SDby= 22.0

MEDwy= 2.1
SDwy= 4.3
rob.SDwy= 3.1

M= 1.1
MED= 0.5

Choix de la méthode

GMFR

R= 0.936
rob.R= 0.750

Sx= 22.19
Sy= 21.66

r= 0.982
b= 1.001
a= 1.088

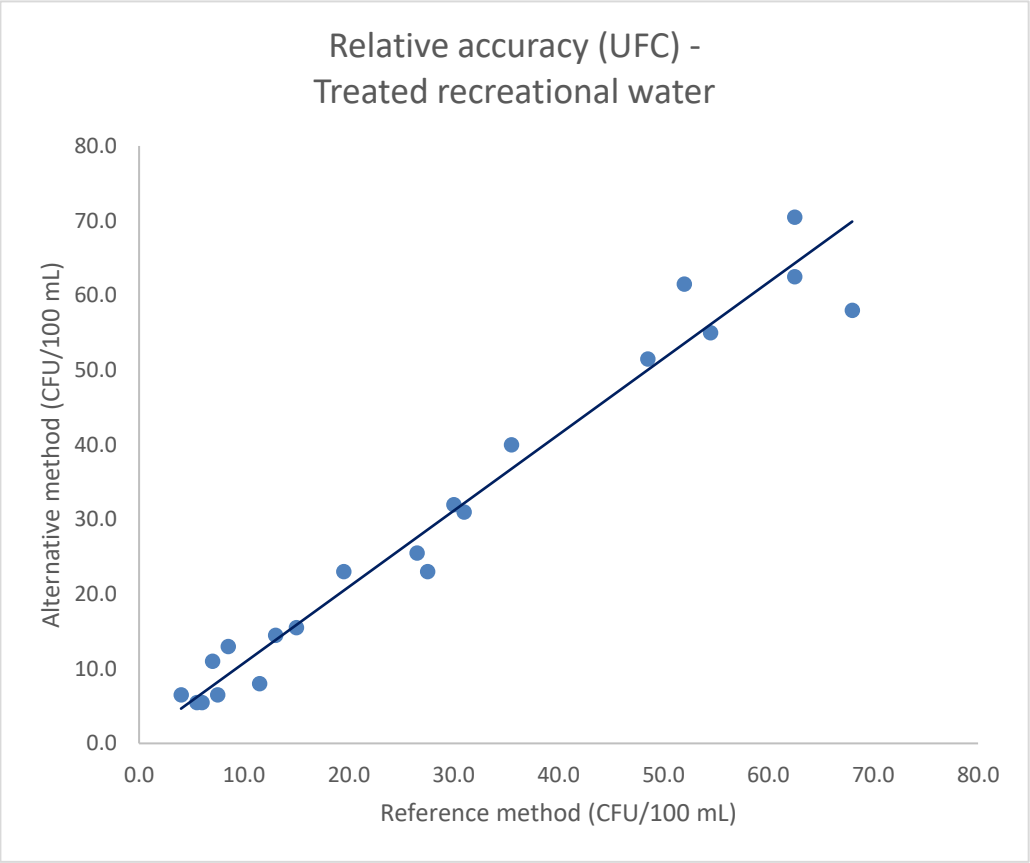
Res. SEM= 4.33
Res.SD= 6.13

S(b)= 0.045
S(a)= 1.581

t(b)= -0.024 -2.101**<-0.024**<2.101 **Hypothèse b=1 validé**
t(a)= -0.689 -2.101**<-0.689**<2.101 **Hypothèse a=0 validé**

Est. y	Dév.
5.093	-1.407
63.656	-6.844
55.647	0.647
27.617	2.117
12.601	4.601
7.095	1.595
32.122	1.122
9.598	-3.402
14.102	-0.398
28.618	5.618
36.627	-3.373
8.096	-2.904
6.594	1.094
8.596	2.096
53.145	-8.355
69.162	11.162
16.105	0.605
63.656	1.156
31.121	-0.879
49.641	-1.859
20.609	-2.391

The points represented correspond to the averages repetitions of each sample



Relative accuracy – Treated recreational water – Log UFC/100 mL

Méthode de référence				
Echantillon	Répétition 1	Répétition 2	M	SD
1	0.602	0.602	0.602	0.000
2	1.756	1.833	1.794	0.054
3	1.708	1.763	1.735	0.039
4	1.380	1.462	1.421	0.058
5	1.041	1.079	1.060	0.027
6	0.699	0.845	0.772	0.103
7	1.447	1.531	1.489	0.060
8	0.954	0.903	0.929	0.036
9	1.146	1.079	1.113	0.047
10	1.491	1.380	1.436	0.079
11	1.591	1.505	1.548	0.061
12	0.903	0.778	0.841	0.088
13	0.602	0.845	0.724	0.172
14	0.778	0.954	0.866	0.125
15	1.748	1.681	1.715	0.047
16	1.851	1.813	1.832	0.027
17	1.146	1.204	1.175	0.041
18	1.820	1.771	1.795	0.034
19	1.505	1.447	1.476	0.041
20	1.716	1.653	1.685	0.044
21	1.322	1.255	1.289	0.047

Méthode alternative				
Echantillon	Répétition 1	Répétition 2	M	SD
1	0.954	0.602	0.778	0.249
2	1.881	1.813	1.847	0.048
3	1.748	1.732	1.740	0.011
4	1.431	1.380	1.406	0.036
5	0.845	0.954	0.900	0.077
6	0.778	0.699	0.739	0.056
7	1.505	1.477	1.491	0.020
8	1.079	1.146	1.113	0.047
9	1.204	1.114	1.159	0.064
10	1.398	1.322	1.360	0.054
11	1.663	1.531	1.597	0.093
12	1.000	1.079	1.040	0.056
13	0.778	0.699	0.739	0.056
14	0.699	0.903	0.801	0.144
15	1.806	1.771	1.789	0.025
16	1.785	1.740	1.763	0.032
17	1.255	1.114	1.185	0.100
18	1.785	1.806	1.796	0.015
19	1.462	1.544	1.503	0.058
20	1.690	1.732	1.711	0.030
21	1.342	1.380	1.361	0.027

Différence
0.176
0.053
0.005
-0.016
-0.161
-0.033
0.002
0.184
0.046
-0.076
0.049
0.199
0.015
-0.065
0.074
-0.069
0.009
0.001
0.027
0.027
0.073

q= 21
n= 2
N=qn= 42

Mx= 1.300
MEDx= 1.421
SDbx= 0.399

MEDwx= 0.047
SDwx= 0.069
rob.SDwx= 0.070

My= 1.325
MEDy= 1.361
SDby= 0.386

MEDwy= 0.054
SDwy= 0.081
rob.SDwy= 0.079

M= 0.025
MED= 0.015

Choix de la méthode

GMFR

R= 1.165
rob.R= 1.131

Sx= 0.397
Sy= 0.386

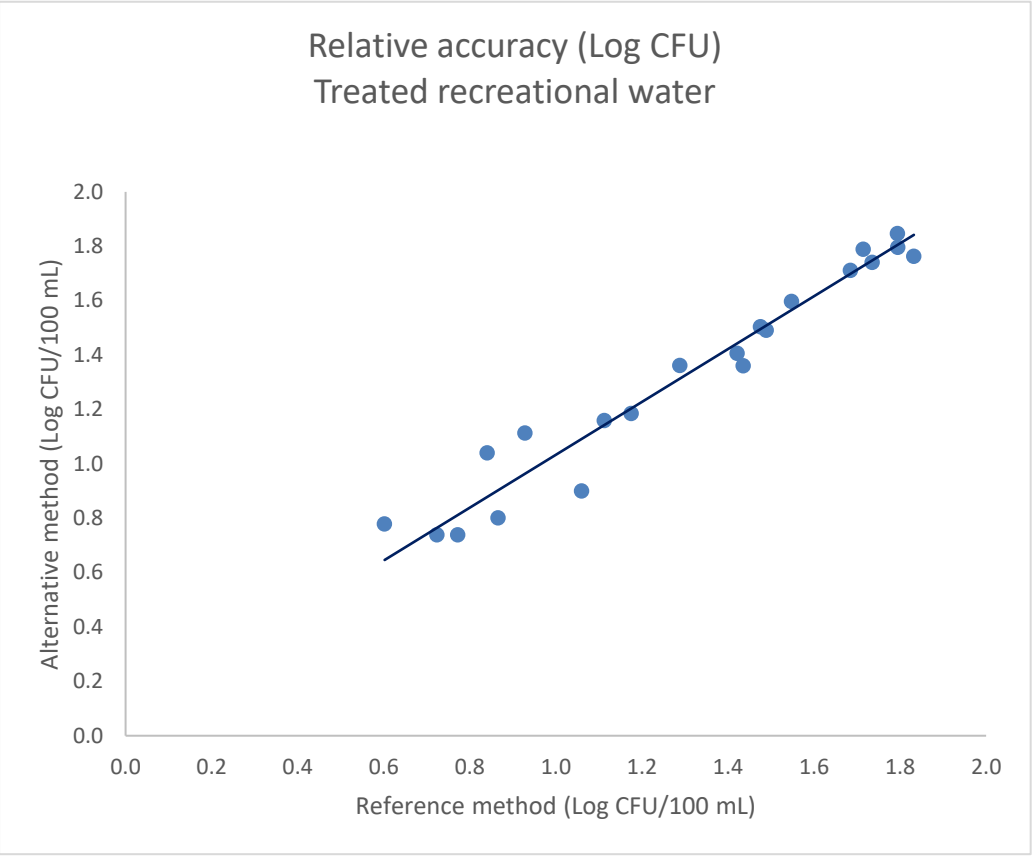
r= 0.976
b= 0.944
a= 0.098

Res. SEM= 0.088
Res.SD= 0.124

S(b)= 0.049 **t(b)=** 1.161 -2.101**<1.161**<2.101 **Hypothèse b=1 validé**
S(a)= 0.066 **t(a)=** -1486 -2.101**<-1.486**<2.101 **Hypothèse a=0 validé**

Est. y	Dév.
0.666	-0.112
1.791	-0.056
1.736	-0.005
1.439	0.033
1.099	0.199
0.827	0.088
1.503	0.012
0.974	-0.138
1.148	-0.011
1.453	0.093
1.559	-0.038
0.891	-0.148
0.781	0.042
0.915	0.114
1.716	-0.072
1.827	0.064
1.207	0.022
1.792	-0.004
1.491	-0.012
1.688	-0.024
1.314	-0.047

The points represented correspond to the averages repetitions of each sample



Appendix 3 – Linearity : raw results

Results obtained by ADRIA Développement (2012) – Bottled water

N° Ech.	Produit	Méthode de référence NF EN ISO 16266 ◆						Méthode alternative RAPID'PsA			
		UFC dénombrées / 250ml		UFC confirmées / 250ml		log UFC / 250ml		UFC / 250ml		log UFC / 250ml	
		Répétition 1	Répétition 2	Répétition 1	Répétition 2	Répétition 1	Répétition 2	Répétition 1	Répétition 2	Répétition 1	Répétition 2
4736	**Eau minérale embouteillée**	4	8	4	8	0,60	0,90	4	4	0,60	0,60
4735		11	5	11	5	1,04	0,70	9	8	0,95	0,90
4719		11	17	11	17	1,04	1,23	15	14	1,18	1,15
4734		27	15	27	15	1,43	1,18	20	20	1,30	1,30
4718		38	35	38	35	1,58	1,54	40	31	1,60	1,49
4717		63	47	63	47	1,80	1,67	60	64	1,78	1,81
4716		101	113	100	110	2,00	2,04	100	120	2,00	2,08

In red: Not in agreement with the standard NF EN ISO 8199 of 2018 but validation of 2012 realized according to the version of 2005 of the standard.

Linéarité - UFC/250 mL

Niveau	Méthode de référence Rep.1	Rep.2	M	SD	Méthode alternative Rep.1	Rep.2	M	SD
1	4	8	6,0	2,828	4	4	4,0	0,000
2	11	5	8,0	4,243	9	8	8,5	0,707
3	11	17	14,0	4,243	15	14	14,5	0,707
4	27	15	21,0	8,485	20	20	20,0	0,000
5	38	35	36,5	2,121	40	31	35,5	6,364
6	63	47	55,0	11,314	60	64	62,0	2,828
7	100	110	105,0	7,071	100	120	110,0	14,142

q = 7
n = 2
N = qn = 14

Mx = 35,1
MEDx = 21,0
SDbx = 35,4

MEDwx = 4,243
SDwx = 4,618
rob. SDwx = 6,290

My = 36,4
MEDy = 20,0
SDby = 38,0

MEDwy = 0,707
SDwy = 4,222
rob. SDwy = 1,048

Choix méthode
OLS; y=réf

Sx = 34,325
Sy = 36,742

R = 0,914
rob.R = 0,167

r = 0,998
b = 0,9
a = 1,2

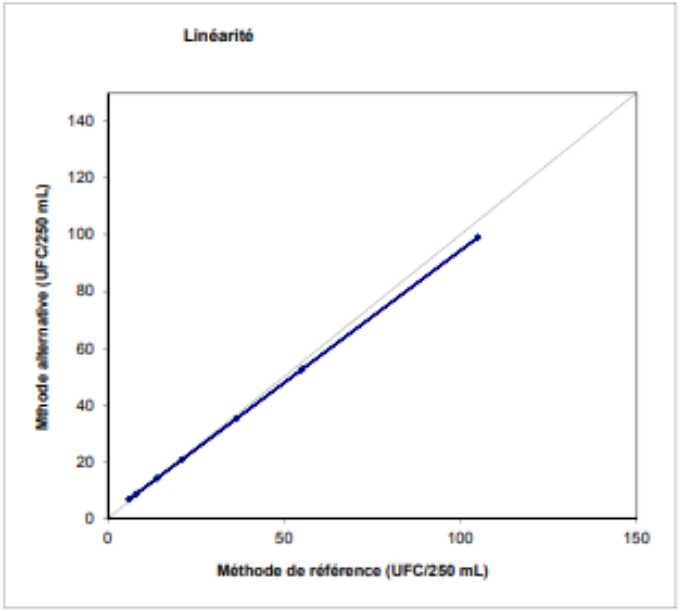
M(Alt.)	Réf.	Est. y	Déviation
6,0	4,0	6,8	-2,8
8,0	9,0	8,6	0,4
14,0	15,0	14,2	0,8
21,0	20,0	20,7	-0,7
36,5	40,0	35,2	4,8
55,0	60,0	52,5	7,5
105,0	100,0	99,1	0,9
6,0	4,0	6,8	-2,8
8,0	8,0	8,6	-0,6
14,0	14,0	14,2	-0,2
21,0	20,0	20,7	-0,7
36,5	31,0	35,2	-4,2
55,0	64,0	52,5	11,5
105,0	120,0	99,1	20,9

Res.SD = 7,564

Sb = 0,061
Sa = 2,946

p(t;b=1) = 0,292
p(t;a=0) = 0,699

t (b) = 1,103
t (a) = 0,396



Linéarité

F = 6,305
rob.F = 123,540

p(F) = 0,016
rob.p(F) = 0,000

Linearity log CFU/250 mL

Niveau	Méthode de référence Rep.1	Rep.2	M	SD	Méthode alternative Rep.1	Rep.2	M	SD
1	0,602	0,903	0,753	0,213	0,602	0,602	0,602	0,000
2	1,041	0,699	0,870	0,242	0,954	0,903	0,929	0,036
3	1,041	1,230	1,136	0,134	1,176	1,146	1,161	0,021
4	1,431	1,176	1,304	0,181	1,301	1,301	1,301	0,000
5	1,580	1,544	1,562	0,025	1,602	1,491	1,547	0,078
6	1,799	1,672	1,736	0,090	1,778	1,806	1,792	0,020
7	2,000	2,041	2,021	0,029	2,000	2,079	2,040	0,056

q = 7
n = 2
N = qn = 14

Mx = 1,340
MEDx = 1,304
SDbx = 0,462

MEDwx = 0,134
SDwx = 0,108
rob. SDwx = 0,198

My = 1,339
MEDy = 1,301
SDby = 0,497

MEDwy = 0,021
SDwy = 0,029
rob. SDwy = 0,031

Choix méthode
OLS; y=réf

Sx = 0,457
Sy = 0,479

R = 0,264
rob.R = 0,158

r = 0,992
b = 0,948
a = 0,072

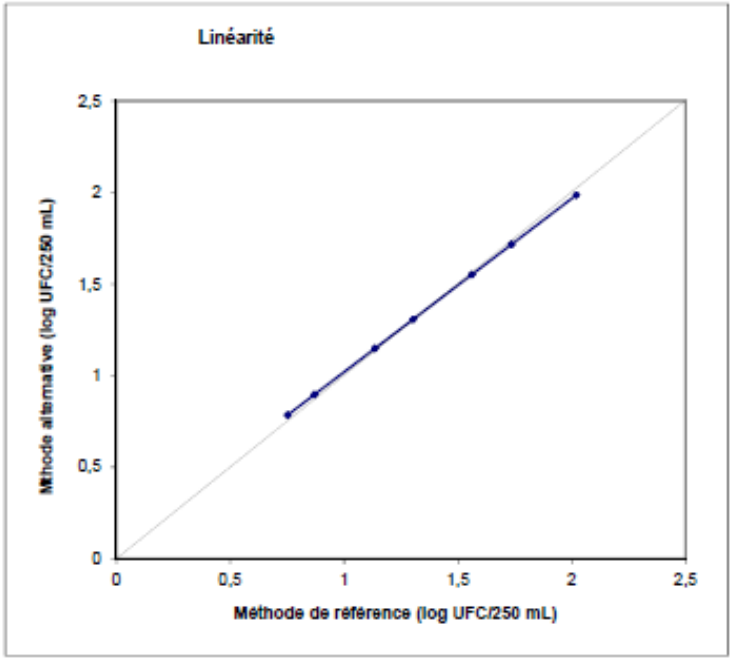
M(Alt.)	Réf.	Est. y	Déviation
0,753	0,602	0,785	-0,183
0,870	0,954	0,896	0,058
1,136	1,176	1,148	0,028
1,304	1,301	1,307	-0,006
1,562	1,602	1,552	0,050
1,736	1,778	1,716	0,062
2,021	2,000	1,986	0,014
0,753	0,602	0,785	-0,183
0,870	0,903	0,896	0,007
1,136	1,146	1,148	-0,002
1,304	1,301	1,307	-0,006
1,562	1,491	1,552	-0,060
1,736	1,806	1,716	0,090
2,021	2,079	1,986	0,093

Res.SD = 0,090

Sb = 0,055
Sa = 0,077

p(t;b=1) = 0,357
p(t;a=0) = 0,373

t (b) = 0,957
t (a) = 0,926



Linéarité

F = 0,271
rob.F = 0,902

p(F) = 0,915
rob.p(F) = 0,529

Results obtained by AdGène Laboratoire (2021)

N° échan.	Produit	Méthode de référence NF EN ISO 16266*						Méthode alternative RAPID'PsA			
		UFC dénombrées / 100 mL		UFC confirmées / 100 mL		log UFC	log UFC	UFC	UFC	log UFC	log UFC
		Répétition 1	Répétition 2	Répétition 1	Répétition 2	Répétition 1	Répétition 2	Répétition 1	Répétition 2	Répétition 1	Répétition 2
P1	Eau de puits	5	4	5	4	**0.70**	**0.60**	5	6	**0.70**	**0.78**
P2		14	19	14	19	**1.15**	**1.28**	19	15	**1.28**	**1.18**
P3		35	39	35	39	**1.54**	**1.59**	36	46	**1.56**	**1.66**
P4		70	68	70	68	**1.85**	**1.83**	74	68	**1.87**	**1.83**
F2	Eau de piscine traitée	2	5	2	5	**0.30**	**0.70**	6	6	**0.78**	**0.78**
F3		18	22	18	22	**1.26**	**1.34**	28	17	**1.45**	**1.23**
F4		31	37	31	37	**1.49**	**1.57**	43	38	**1.63**	**1.58**
F5		62	73	62	73	**1.79**	**1.86**	79	73	**1.90**	**1.86**

*** Essai effectué sous le couvert de l'accréditation**

Linearity – Human consumption water – CFU/250 mL

Niveau	Méthode de référence				Méthode alternative			
	Répétition 1	Répétition 2	M	SD	Répétition 1	Répétition 2	M	SD
1	5	4	4.5	0.707	5	6	5.5	0.707
2	14	19	16.5	3.536	19	15	17.0	2.828
3	35	39	37.0	2.828	36	46	41.0	7.071
4	70	68	69.0	1.414	74	68	71.0	4.243

q= 4
n= 2
N=qn= 8

Mx= 31.8
MEDx= 26.8
SDbx= 28.2

MEDwx= 2.1
SDwx= 2.4
rob.SDwx= 3.1

My= 33.6
MEDy= 29.0
SDby= 29.0

MEDwy= 3.5
SDwy= 4.4
rob.SDwy= 5.2

Choix de la méthode
GMFR

Sx= 26.2
Sy= 27.0

R= 1.824
rob.R= 1.667

r= 0.999
b= 1.025
a= 1.070

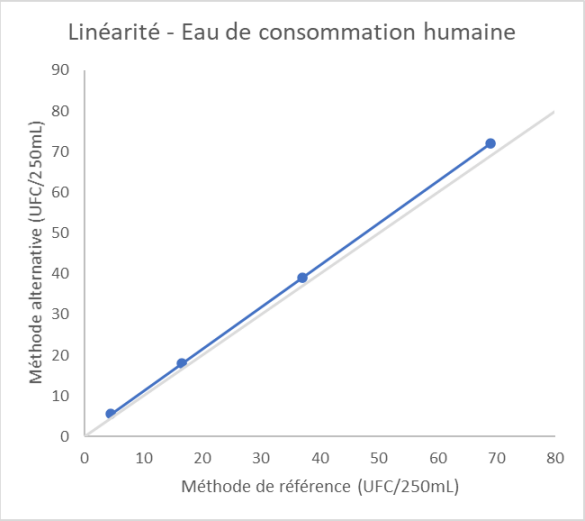
M (Réf.)	Alt.	Est. Y	Déviation
4.5	5.0	6.2	1.7
16.5	19.0	20.5	4.0
37.0	36.0	38.0	1.0
69.0	74.0	76.9	7.9
4.5	6.0	7.2	2.7
16.5	15.0	16.4	-0.1
37.0	46.0	48.2	11.2
69.0	68.0	70.8	1.8

Res.SD= 2.4

S(b)= 0.020
S(a)= 41.133

t(b)= -1.278
t(a)= -0.026

-2.447**<1.161**<2.447 **Hypothèse b=1 validé**
-2.447**<-1.486**<2.447 **Hypothèse a=0 validé**



Linéarité

F= 1.988 **F_{crit}=** 6.944

1.988 <6.944 la relation est linéaire

Linearity – Human consumption water – Log CFU/250 mL

Niveau	Méthode de référence				Méthode alternative			
	Répétition 1	Répétition 2	M	SD	Répétition 1	Répétition 2	M	SD
1	0.699	0.602	0.651	0.069	0.699	0.778	0.739	0.056
2	1.146	1.279	1.212	0.094	1.279	1.176	1.227	0.073
3	1.544	1.591	1.568	0.033	1.556	1.663	1.610	0.075
4	1.845	1.833	1.839	0.009	1.869	1.833	1.851	0.026

q= 4
n= 2
N=qn= 8

Mx= 1.317
MEDx= 1.390
SDbx= 0.513

MEDwx= 0.051
SDwx= 0.061
rob.SDwx= 0.075

My= 1.357
MEDy= 1.418
SDby= 0.485

MEDwy= 0.064
SDwy= 0.061
rob.SDwy= 0.095

Choix de la méthode
GMFR

Sx= 0.477
Sy= 0.452

R= 1.002
rob.R= 1.264

r= 0.999
b= 0.945
a= 0.112

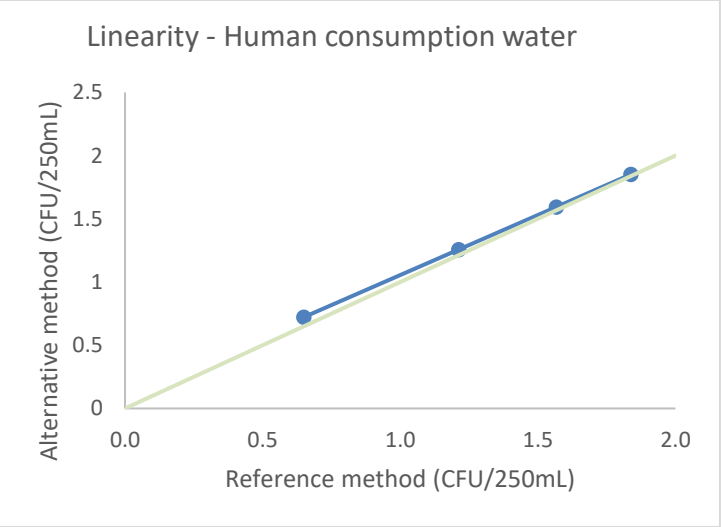
M (Réf.)	Alt.	Est. Y	Déviation
0.651	0.699	0.772	0.122
1.212	1.279	1.320	0.108
1.568	1.556	1.582	0.015
1.839	1.869	1.878	0.039
0.651	0.778	0.778	0.128
1.212	1.176	1.176	-0.036
1.568	1.663	1.663	0.095
1.839	1.833	1.833	-0.006

Res.SD= 0.036

S(b)= 0.017
S(a)= 1.315

t(b)= 3.295
t(a)= -0.085

3.295>2.447 **Hypothèse b=1 non validé**
-2.447**<-0.085**<2.447 **Hypothèse a=0 validé**



Linéarité

F= 1.990 **F_{crit}=** 6.944

1.990 <6.944 la relation est linéaire

Linearity – Treated recreational water – CFU/100 mL

Niveau	Méthode de référence				Méthode alternative			
	Répétition 1	Répétition 2	M	SD	Répétition 1	Répétition 2	M	SD
1	2	5	3.5	2.121	6	6	6.0	0.000
2	18	22	20.0	2.828	17	15	16.0	1.414
3	31	37	34.0	4.243	38	46	42.0	5.657
4	62	73	67.5	7.778	73	68	70.5	3.536

q= 4
n= 2
N=qn= 8

Mx= 31.3
MEDx= 27.0
SDbx= 27.2

MEDwx= 3.5
SDwx= 4.8
rob.SDwx= 5.2

My= 33.6
MEDy= 29.0
SDby= 28.9

MEDwy= 2.5
SDwy= 3.4
rob.SDwy= 3.7

Choix de la méthode
GMFR

R= 0.715
rob.R= 0.700

Sx= 25.4
Sy= 26.9

r= 0.986
b= 1.048
a= 0.876

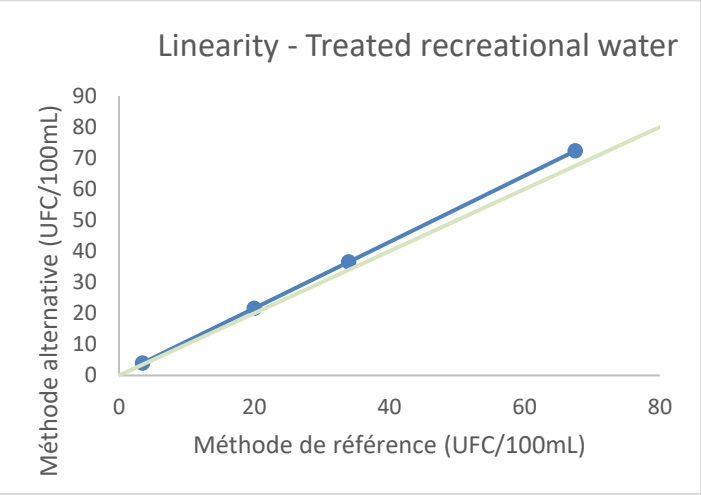
Res.SD= 12.4

M (Réf.)	Alt.	Est. Y	Déviation
3.5	6.0	7.2	3.7
20.0	17.0	18.7	-1.3
34.0	38.0	40.7	6.7
67.5	73.0	77.4	9.9
3.5	6.0	7.2	3.7
20.0	15.0	16.6	-3.4
34.0	46.0	49.1	15.1
67.5	68.0	72.1	4.6

S(b)= 0.071
S(a)= 41.571

t(b)= -0.673
t(a)= -0.021

-2.447**<-0.673**<2.447 **Hypothèse b=1 validé**
-2.447**<-0.021**<2.447 **Hypothèse a=0 validé**



Linéarité

F= 1.684 **F_{crit}=** 6.944

1.684 <6.944 la relation est linéaire

Linearity – Treated recreational water – Log CFU/100 mL

Niveau	Méthode de référence				Méthode alternative			
	Répétition 1	Répétition 2	M	SD	Répétition 1	Répétition 2	M	SD
1	0.301	0.699	0.500	0.281	0.778	0.778	0.778	0.000
2	1.255	1.342	1.299	0.062	1.447	1.230	1.339	0.153
3	1.491	1.568	1.530	0.054	1.633	1.580	1.607	0.038
4	1.792	1.863	1.828	0.050	1.898	1.863	1.880	0.024

q= 4
n= 2
N=qn= 8

Mx= 1.289
MEDx= 1.414
SDbx= 0.569

MEDwx= 0.058
SDwx= 0.149
rob.SDwx= 0.086

My= 1.401
MEDy= 1.473
SDby= 0.470

MEDwy= 0.031
SDwy= 0.080
rob.SDwy= 0.046

Choix de la méthode
GMFR

Sx= 0.539
Sy= 0.440

R= 0.537
rob.R= 0.537

r= 0.995
b= 0.823
a= 0.341

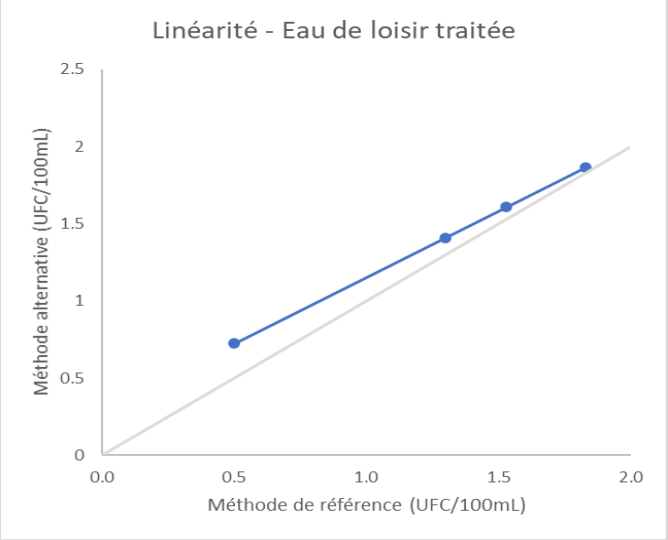
M (Réf.)	Alt.	Est. Y	Déviation
0.500	0.778	0.981	0.481
1.299	1.447	1.532	0.233
1.530	1.633	1.685	0.156
1.828	1.898	1.903	0.075
0.500	0.778	0.981	0.481
1.299	1.230	1.354	0.055
1.530	1.580	1.641	0.111
1.828	1.863	1.875	0.047

Res.SD= 0.182

S(b)= 0.035
S(a)= 1.141

t(b)= 5.120
t(a)= -0.298

5.120>2.447 **Hypothèse b=1 non validé**
-2.447**<-0.298**<2.447 **Hypothèse a=0 validé**



Linéarité

F= 1.739 **F_{crit}=** 6.944

1.739 <6.944 la relation est linéaire

Appendix 4 - Detection and quantification limits: raw results

Filtration of 250 ml – place the membrane on RAPID'PsA

Taux d'inoculation	Inoculum (UFC/ 250 ml)*	Réplicats (UFC/ 250 ml)					
		1	2	3	4	5	6
0	0,00	0	0	0	0	0	0
1	1,15	1	2	0	0	0	0
2	2,36	2	1	0	0	0	0
3	3,11	1	3	0	1	0	0
5	5,14	0	3	1	3	6	2
10	10,08	7	8	8	8	5	3

*: average obtained from 10 counts

Taux d'inoculation	Nombre d'échantillons positifs	Ecart-type (S0)	Biais X0 (médiane des Xoi)
0	0	/	/
1	2	0,837	0
2	2	0,837	0
3	3	1,169	0,5
5	5	2,074	2,5
10	6	2,074	7,5

Appendix 5 – Inclusivity / Exclusivity : raw results

INCLUSIVITE											
Souche		Référence	Origine	Gélose RAPID' PsA		Gélose CN					Gélose TSA
				UFC / 250ml	Aspect colonies	UFC / 250ml	Aspect colonies	Test Oxydase	Production d'ammoniac (acétamide)	Emission de fluorescence (milieu King B)	UFC / 250ml
Pseudomonas	aeruginosa	Ad1553	Environnement eau	29 - 34	Bleues - vertes	50 - 46	Jaunes – vertes	/	/	/	47 - 41
Pseudomonas	aeruginosa	WDCM 00027	Blessure	0 - 0	/	58 - 46	Vertes	+	+	+	61 - 53
Pseudomonas	*aeruginosa*	WDCM 00025	Sang	49 - 56	Bleues - vertes	57 - 51	Vertes	/	/	/	47 - 46
Pseudomonas	*aeruginosa*	CIP82118	Infection d'oreille interne	32 - 40	Bleues - vertes	44 - 47	Bleues – vertes	/	/	/	39 - 53
Pseudomonas	*aeruginosa*	Ad 1605	Eau de réseau	57 - 39	Vertes	51 - 52	Bleues – vertes	/	/	/	72 - 69
Pseudomonas	*aeruginosa*	Ad 1554	Environnement eau	40 - 51	Bleues - vertes	48 - 46	Vertes	/	/	/	51 - 51
Pseudomonas	*aeruginosa*	Ad 1552	Eau de piscine	69 - 54	Bleues - vertes	64 - 71	Vertes	/	/	/	67 - 59
Pseudomonas	*aeruginosa*	Ad 1536	Inconnue	66 - 64	Vertes	75 - 77	Bleues - vertes	/	/	/	82 - 81
Pseudomonas	*aeruginosa*	NE 55	Eau	67 - 67	Bleues - vertes	78 - 84	Bleues – vertes	/	/	/	83 - 79
Pseudomonas	*aeruginosa*	NE 63	Eau	78 - 87	Vertes	98 - 116	Bleues – vertes	/	/	/	99 - 82
Pseudomonas	*aeruginosa*	NE 64	Eau	101 - 91	Vertes	113 - 109	Bleues – vertes	/	/	/	80 - 100
Pseudomonas	*aeruginosa*	NE 78	Eau	91 - 83	Vertes	90 - 86	Vertes	/	/	/	92 - 97
Pseudomonas	*aeruginosa*	Ad 1528	Eau de rivière	78 - 63	Bleues - vertes	79 - 67	Bleues - vertes	/	/	/	80 - 91

Pseudomonas	*aeruginosa*	Ad 1529	Eau de rivière	33 - 46	Bleues - vertes	38 - 37	Bleues – vertes	/	/	/	43 - 51
Pseudomonas	*aeruginosa*	Ad 1530	Eau de rivière	75 - 60	Bleues - vertes	78 - 82	Bleues – vertes	/	/	/	87 - 109
Pseudomonas	*aeruginosa*	Ad 1531	Eau de rivière	96 - 76	Vertes	118 - 131	Jaunes	+	+	+	113 - 110
Pseudomonas	*aeruginosa*	Ad 1532	Eau	79 - 93	Vertes	72 - 78	Crèmes	+	+	+ faible	95 - 98
Pseudomonas	*aeruginosa*	Ad 1533	Clinique humaine	76 - 82	Vertes	110 - 101	Bleues – vertes	/	/	/	75 - 83
Pseudomonas	*aeruginosa*	Ad 1534	Clinique humaine	88 - 91	Vertes	60 - 74	Blanches	+	+	+	85 - 93
Pseudomonas	*aeruginosa*	Ad 1535	Clinique humaine	95 - 91	Vertes	100 - 97	Beiges	+	+	+	100 - 91
Pseudomonas	*aeruginosa*	Ad 1606	Eau de réseau	17 - 12	Vertes	43 - 47	Bleues – vertes	/	/	/	44 - 50
Pseudomonas	*aeruginosa*	Ad 1607	Eau de réseau	54 - 60	Vertes	104 - 82	Bleues – vertes	/	/	/	69 - 76
Pseudomonas	*aeruginosa*	Ad 1608	Eau de pulvérisation	36 - 33	Vertes	79 - 99	Bleues - vertes grisées	/	/	/	95 - 74
Pseudomonas	*aeruginosa*	Ad 1609	Eau de pulvérisation	39 - 39	Vertes	51 - 32	Bleues – vertes	/	/	/	34 - 42
Pseudomonas	*aeruginosa*	Ad 1651	Eau de pulvérisation	8 - 6	Vertes	36 - 56	Bleues - vertes grisées	/	/	/	66 - 67

	EXCLUSIVITE											
	Souche		Référence	Origine	Gélose RAPID' PsA		Gélose CN					Gélose TSA
					UFC / 250ml	Aspect colonies	UFC / 250ml	Aspect colonies	Test Oxydase	Production d'ammoniac (acétamide)	Emission de fluorescence (milieu King B)	UFC / 250ml
1.	*Acinetobacter*	*sp.*	Ad 1551	Eau	0 - 0	/	0 - 0	/	/	/	/	5800 - 5000
2.	*Aeromonas*	*allosacharophile*	Ad 1518	Biofilm	0 - 0	/	0 - 0	/	/	/	/	9500 - 8300
3.	*Aeromonas*	*hydrophila*	Ad 1570	Eau de rivière	0 - 0	/	>>200 - >>200	Crèmes jaunes	/	/	/	9500 - 5500
4.	*Aeromonas*	*punctata*	Ad 1589	Eau de process	0 - 0	/	0 - 0	/	/	/	/	5000 - 1750
5.	*Aeromonas*	*punctata*	Ad 1569	Eau de rivière	0 - 0	/	>>200 - >>200	Crèmes jaunes	/	/	/	3800 - 4800
6.	*Agrobacterium*	*tumefasciens*	Ad 1550	Eau stagnante	0 - 0	/	>>200 - >>200	Crèmes	/	/	/	17000 - 18000
7.	*Burkholderia*	*cepacia*	Ad 1541	Sol	0 - 0	/	0 - 0	/	/	/	/	8300 - 7000
8.	*Burkholderia*	*vietnamiensis*	Ad 1538	Sol	0 - 0	/	>>200 - >>200	Crèmes	/	/	/	6500 - 7300
9.	*Comamonas*	*aquatica*	Ad 1543	Eau industrie papier	0 - 0	/	0 - 0	/	/	/	/	3000 - 3000
10.	*Comamonas*	*sp.*	Ad 1537	Sol	0 - 0	/	0 - 0	/	/	/	/	5500 - 5800
11.	*Escherichia*	*coli*	Ad 1584	Eau de rivière	0 - 0	/	>>200 - >>200	Beiges	-	-	+ léger	8500 - 4500
12.	*Pseudomonas*	*fluorescens*	Ad 1515	Biofilm	0 - 0	/	0 - 0	/	/	/	/	12000 - 12000
13.	*Pseudomonas*	*pseudoalcaligenes*	Ad 1592	Environnement eau	0 - 0	/	0 - 0	/	/	/	/	11000 - 11000
14.	*Pseudomonas*	*putida*	Ad 1539	Sol	0 - 0	/	0 - 0	/	/	/	/	3500 - 5200
15.	*Pseudomonas*	*putida*	Ad 1540	Sol	0 - 0	/	5 - 9	Crèmes	+	-	+ léger	1300 - 1000
16.	*Pseudomonas*	*putida*	Ad 1591	Environnement eau	0 - 0	/	0 - 0	/	/	/	/	19000 - 19000
17.	*Pseudomonas*	*putida*	Ad 1585	Eau stagnante	0 - 0	/	>>200 - >>200	Beiges	+	+	+ faible	7800 - 16000

18.	*Pseudomonas*	*putida*	Ad 1602	Eau de rivière	0 - 0	/	>>200 - >>200	Crèmes	/	/	/	16000 - 17000
19.	*Pseudomonas*	*sp.*	Ad 1542	Eau de process	0 - 0	/	0 - 0	/	/	/	/	2500 - 1500
20.	*Pseudomonas*	*sp.*	Ad 1547	Eau de piscine	0 - 0	/	>>200 - >>200	Crèmes jaunes	/	/	/	7000 - 5800
21.	*Pseudomonas*	*sp.*	Ad 1548	Eau de forage	0 - 0	/	>>200 - >>200	Crèmes jaunes	+	-	-	1300 - 1000
22.	*Pseudomonas*	*sp.*	Ad1549	Eau stagnante	0 - 0	/	150 - 66	Incolore	+	-	-	6800 - 7800
23.	*Pseudomonas*	*stutzeri*	Ad 1593	Environnement eau	0 - 0	/	0 - 0	/	/	/	/	11000 - 11000
24.	*Xanthomonas*	*maltophilia*	11.2	Végétal	0 - 0	/	0 - 0	/	/	/	/	16000 - 19000

Appendix 6 – Results from collaborating laboratories and the expert laboratory

Results from collaborating laboratories

N° éch.	Méthode de référence ISO 16266		Méthode RAPID'PsA		Méthode ISO 6222 (ufc/ml) 22°C	Méthode ISO 6222 (ufc/ml) 36°C
	Colonies (bleues vertes) ufc/boite	ufc/250ml	Colonies ufc/boite	ufc/250ml		
A5	0	<1	0	<1	630 N'	7 Ne
A8	0	<1	0	<1		
A2	2	2	7	7		
A7	8	8	4	4		
A1	7	7	12	12		
A4	7	7	9	9		
A3	53	53	55	55		
A6	62	62	51	51		
B5	/	/	/	/	/	/
B8	/	/	/	/		
B2	/	/	/	/		
B7	/	/	/	/		
B1	/	/	/	/		
B4	/	/	/	/		
B3	/	/	/	/		
B6	/	/	/	/		
C5	0	<1	0	<1	46	<1
C8	0	<1	0	<1		
C2	5	5	3	3		
C7	8	8	5	5		
C1	12	12	16	16		
C4	6	6	14	14		
C3	57	57	63	63		
C6	59	59	54	54		
D5	0	<1	0	<1	160	<1
D8	0	<1	0	<1		
D2	6	6	4	4		
D7	4	4	5	5		
D1	9	9	11	11		
D4	6	6	16	16		
D3	44	44	58	58		
D6	50	50	58	58		
E5	0	<1	0	<1	31	<1
E8	0	<1	0	<1		
E2	4	4	3	3		
E7	9	9	5	5		
E1	8	8	5	5		
E4	7	7	12	12		
E3	53	53	59	59		
E6	49	49	47	47		

N° éch.	Méthode de référence ISO 16266		Méthode RAPID'PsA		Méthode ISO 6222 (ufc/ml) 22°C	Méthode ISO 6222 (ufc/ml) 36°C
	Colonies (bleues vertes) ufc/boite	ufc/250ml	Colonies ufc/boite	ufc/250ml		
F5	0	<1	0	<1	230	4 Ne
F8	0	<1	0	<1		
F2	2	2	4	4		
F7	9	9	4	4		
F1	11	11	13	13		
F4	16	16	10	10		
F3	59	59	62	62		
F6	50	50	62	62		
G5	0	<1	0	<1	75	260
G8	0	<1	0	<1		
G2	1	1	5	5		
G7	6	6	4	4		
G1	10	10	8	8		
G4	20	20	5	5		
G3	58	58	56	56		
G6	57	57	56	56		
H5	0	<1	0	<1	270	130
H8	0	<1	0	<1		
H2	2	2	3	3		
H7	3	3	7	7		
H1	0	<1	1	1		
H4	4	4	6	6		
H3	19	19	33	33		
H6	31	31	27	27		
I5	0	<1	0	<1	60 Ne	< 4
I8	0	<1	0	<1		
I2	2	2	4	4		
I7	4	4	1	1		
I1	11	11	15	15		
I4	10	10	7	7		
I3	58	58	64	64		
I6	65	65	50	50		
J5	0	<1	0	<1	46	15
J8	0	<1	0	<1		
J2	6	6	4	4		
J7	7	7	5	5		
J1	9	9	10	10		
J4	8	8	9	9		
J3	63	63	62	62		
J6	61	61	57	57		

N° éch.	Méthode de référence ISO 16266		Méthode RAPID'PsA		Méthode ISO 6222 (ufc/ml) 22°C	Méthode ISO 6222 (ufc/ml) 36°C
	Colonies (bleues vertes) ufc/boite	ufc/250ml	Colonies ufc/boite	ufc/250ml		
K5	0	<1	0	<1	88	74
K8	0	<1	0	<1		
K2	3	3	9	9		
K7	3	3	8	8		
K1	14	14	8	8		
K4	13	13	13	13		
K3	53	53	47	47		
K6	54	54	61	61		
L5	0	<1	0	<1	56	16
L8	0	<1	0	<1		
L2	5	5	5	5		
L7	6	6	3	3		
L1	10	10	10	10		
L4	12	12	12	12		
L3	50	50	55	55		
L6	58	58	52	52		
M5	0	<1	0	<1	< 4	<1
M8	0	<1	0	<1		
M2	15	15	9	9		
M7	7	7	2	2		
M1	11	11	9	9		
M4	12	12	11	11		
M3	45	45	47	47		
M6	52	52	56	56		
N5	0	<1	0	<1	190	18
N8	0	<1	0	<1		
N2	4	4	5	5		
N7	2	2	1	1		
N1	9	9	11	11		
N4	9	9	12	12		
N3	54	54	64	64		
N6	69	69	80	80		
O5	0	<1	0	<1	18	< 4
O8	0	<1	0	<1		
O2	3	3	9	9		
O7	2	2	3	3		
O1	10	10	7	7		
O4	10	10	14	14		
O3	38	38	47	47		
O6	35	35	48	48		

N° éch.	Méthode de référence ISO 16266		Méthode RAPID'PsA		Méthode ISO 6222 (ufc/ml) 22°C	Méthode ISO 6222 (ufc/ml) 36°C
	Colonies (bleues vertes) ufc/boite	ufc/250ml	Colonies ufc/boite	ufc/250ml		
P5	0	< 1	0	<1	19	7 Ne
P8	0	< 1	0	<1		
P2	3	3	2	2		
P7	3	3	3	3		
P1	15	15	12	12		
P4	15	15	4	4		
P3	59	59	59	59		
P6	59	59	59	59		
Q5	0	< 1	0	<1	1200	17
Q8	0	< 1	0	<1		
Q2	5	5	8	8		
Q7	6	6	4	4		
Q1	10	10	6	6		
Q4	11	11	21	21		
Q3	59	59	56	56		
Q6	54	54	56	56		
R5	0	< 1	0	<1	200	100
R8	0	< 1	0	<1		
R2	7	7	5	5		
R7	10	10	5	5		
R1	8	8	9	9		
R4	6	6	8	8		
R3	54	54	52	52		
R6	51	51	57	57		
S5	0	< 1	0	<1	/	9 Ne
S8	0	< 1	0	<1		
S2	3	3	6	6		
S7	1	1	2	2		
S1	11	11	3	3		
S4	4	4	4	4		
S3	58	58	52	52		
S6	56	56	48	48		

Results from the expert laboratory: ADRIA

N° éch.	Méthode de référence ISO 16266 ◆		Méthode RAPID'PsA		Méthode ISO 6222 (ufc/ml) 22°C	Méthode ISO 6222 (ufc/ml) 36°C
	Colonies (bleues vertes) ufc/boite	ufc/250ml	Colonies ufc/boite	ufc/250ml		
T5	0	< 1	0	<1	160	6 Ne
T8	0	< 1	0	<1		
T2	9	9	6	6		
T7	4	4	10	10		
T1	12	12	6	6		
T4	8	8	7	7		
T3	52	52	76	76		
T6	57	57	55	55		