Proficiency Testing

Food Microbiology

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Proficiency Testing

Microbiology – Food

October 2014

1457
ISO/IEC 17043

Quantitative analyses

- Aerobic microorganisms, 30 °C
- Aerobic microorganisms, 20 °C
- Contaminating microorganisms in dairy products
- Enterobacteriaceae
- Coliform bacteria 30 ºC
- Coliform bacteria 37 ºC
- Thermotolerant coliform bacteria
- *Escherichia coli*
- Presumptive *Bacillus cereus*
- Coagulase positive staphylococci
- Enterococci

Qualitative analyses

- Gram-negative bacteria in pasteurized milk and cream

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Abbreviations

Media

BA	Blood Agar
BcS	Bacillus cereus Selective agar
BGB	Brilliant Green Broth
BP	Baird-Parker agar
EC medium	Escherichia coli medium
PCA	Plate count agar
MPCA	Milk Plate Count agar
MYP	Mannitol-Egg Yolk-Polymyxin agar
RPF	Rabbit Plasma Fibrinogen
S&B	Slanetz & Bartley agar
TBX	Tryptone Bile X-Glucuronide agar
TSA	Trypticase Soy agar
TGE	Tryptone Glucose Extract agar
VRB	Violet Red Bile agar
VRBG	Violet Red Bile Glucose agar

Organisations

AFNOR	Association Française de Normalisation
AOAC	Association of Analytical Communities
IDF	International Dairy Federation
ISO	International Organization for Standardization
NMKL	Nordic Committee for Food Analyses
SLV/NFA	Livsmedelsverket/National Food Agency, Sweden

Contents

General information on results evaluation

Statistical evaluation of the results

Highly deviating values that did not belong to a strictly normal distribution were identified as statistical outliers (Grubbs' test modified by Kelly (1)). In some cases, subjective adjustments were made to set limits, based on knowledge of the mixture's contents. Outliers and false results were not included in the calculations of means and standard deviations. Results reported as ">value" were excluded from the evaluation. Results reported as "<value" were interpreted as being zero (negative result). All reported results are presented in Annex 1.

According to EN ISO/IEC 17043, for which the proficiency testing programme organised by the National Food Agency is accredited since early 2012, it is mandatory for the participating laboratories to give method information for all analyses for which they report results. Method information is sometimes difficult to interpret, e.g. several laboratories choose a medium that differs from that in the reported standard methods. Therefore, in the following section, results have been grouped according to the method or the medium used to perform the analysis.

Uncertainty of measurement for the assigned values

The uncertainty of measurement for an assigned value is calculated as the standard deviation divided by the square root of the number of correct results ("standard error"). The assigned value of evaluated parameters is the mean value of the participants results.

Tables and figures legend

Tables

n	number of laboratory that performed the analysis
m	results mean value in $\log_{10}$ cfu/ml (false results and outliers excluded)
s	results standard deviation
F	number of false positive or false negative results
<	number of low outliers
>	number of high outliers
	global results for the analysis
	values discussed in the text

Figures

Histograms of all analytical results obtained for each mixture are presented. The mean value of the analysis results is indicated in each histogram.

- values within the interval of acceptance (Annex 1)
- outliers
- false negative results
- * values outside of the x-axis scale

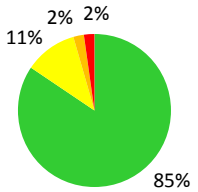
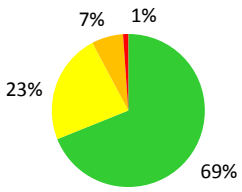
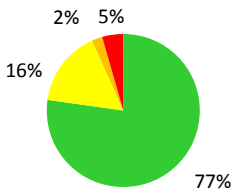
Results of the PT round October 2014

General outcome

Samples were sent to 190 laboratories, 48 in Sweden, 124 in other European countries, and 18 outside Europe. 180 laboratories reported results, 46 % provided at least one result that received an annotation. In the previous round (October 2013) with similar analyses, the proportion was 33 %.

Individual results for each analysis of the PT round are listed in annex 1 and are also available on the website after logging in: www.slv.se/absint/index.aspx .

Table 1 *Microorganisms in each mixture and % of deviating results (F%: false positive or false negative, Out: outliers).*

		Mixture A			Mixture B			Mixture C		
% participants with 0 annotation 1 annotation 2 annotations >2 annotations										
Organisms		*Klebsiella pneumoniae* *Escherichia coli* *Enterococcus faecium*			*Enterobacter aerogenes* *Proteus mirabilis* *Enterococcus durans*			*Micrococcus sp.* *Escherichia coli* *Bacillus cereus* *Staphylococcus aureus*		
Analysis		**Target**	**F%**	**Out**	**Target**	**F%**	**Out**	**Target**	**F%**	**Out**
Aerob. microorg,	30 °C	***K. pneumoniae*** ***E. coli*** ***E. faecium***	0	6	***E. aerogenes*** ***P. mirabilis*** ***E. durans***	0	4	***Micrococcus*** ***E. coli*** ***B. cereus*** ***S. aureus***	0	5
	20 °C		0	4		0	7		0	4
Contaminating microorg.		***K. pneumoniae*** ***E. coli*** ***E. faecium***	0	11	***E. aerogenes*** ***P. mirabilis*** ***E. durans***	0	0	***Micrococcus*** ***E. coli*** ***B. cereus*** ***S. aureus***	0	0
Enterobacteriaceae		***K. pneumoniae*** ***E. coli***	1	5	***E. aerogenes*** ***P. mirabilis***	1	4	***E. coli***	0	8
Coliforms	30 °C	***K. pneumoniae*** ***E. coli***	0	2	***E. aerogenes*** (*P. mirabilis*)	20	6	***E. coli***	2	0
	37 °C		1	3		26	1		4	7
Thermotol. coliform		***K. pneumoniae*** ***E. coli***	0	4	(*E. aerogenes*)	17	0	***E. coli***	0	4
E. coli		***E. coli***	1	4	-	0	0	***E. coli***	5	5
Presump. *B. cereus*		-	2	-	-	4	-	***B. cereus***	1	3
Coag. pos. Staph.		-	3	-	-	0	-	***S. aureus***	4	12
Enterococci		***E. faecium***	5	5	***E. durans***	1	4	-	3	-
Gram-neg microog. in past. dairy prod.		***K. pneumoniae*** ***E. coli***	0	-	***E. aerogenes*** ***P. mirabilis***	0	-	***E. coli***	0	-

- : no target organism or no value; (*microorganism*): false positive

Aerobic microorganisms, 20°C and 30°C

Mixture A

The colonies counted for these analyses were mainly from the strains of *Enterococcus faecium* present at the highest concentration in mixture A.

Mixture B

Colonies from the three strains present in mixture B could be counted for these analyses, i.e *Enterobacter aerogenes*, *Proteus mirabilis* and *Enterococcus durans*.

Mixture C

The colonies counted for these analyses were mainly from the strains of *Micrococcus spp.* and *Staphylococcus aureus* present at the highest concentration in mixture C.

Results of aerobic microorganisms analysis, 20°C

Medium	Mixture A						Mixture B						Mixture C					
	n	m	s	F	<	>	n	m	s	F	<	>	n	m	s	F	<	>
Total	27	4.00	0.10	0	0	1	28	4.38	0.12	0	0	2	28	4.75	0.15	0	0	1
PCA	21	4.02	0.10	0	0	1	22	4.40	0.11	0	0	2	22	4.77	0.14	0	0	1
Petrifilm™	4	3.94	0.08	0	0	0	4	4.35	0.09	0	0	0	4	4.66	0.19	0	0	0

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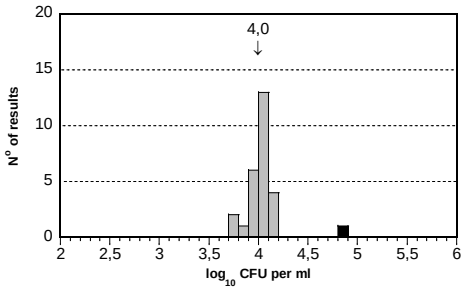

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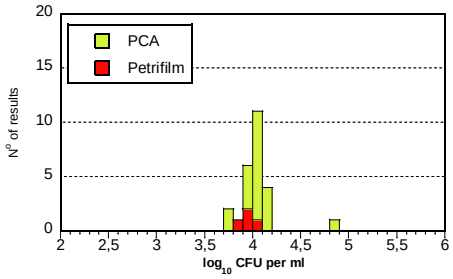

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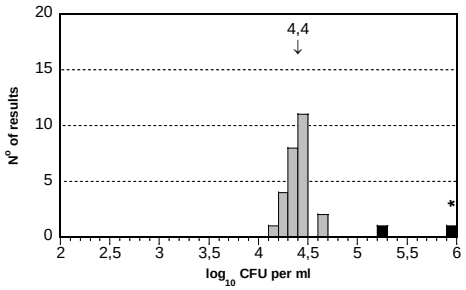

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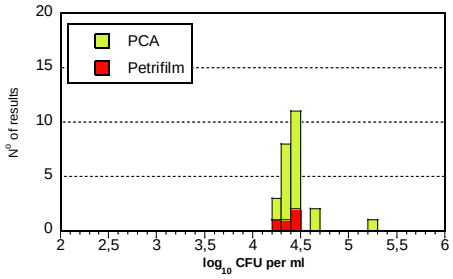

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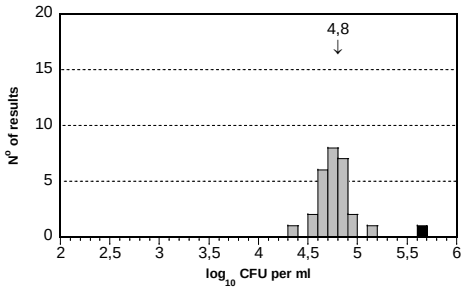

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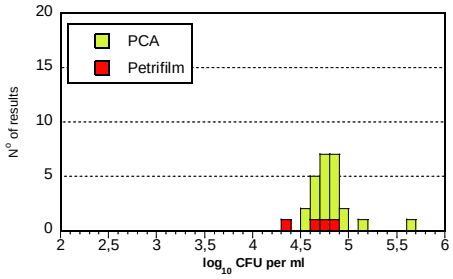

Results of aerobic microorganisms analysis, 30°C

Medium	Mixture A						Mixture B						Mixture C					
	n	m	s	F	<	>	n	m	s	F	<	>	n	m	s	F	<	>
Total	174	4.04	0.10	0	3	7	174	4.40	0.16	0	3	4	174	4.80	0.14	0	5	4
PCA	95	4.01	0.08	0	3	4	94	4.38	0.14	0	2	3	95	4.80	0.14	0	5	2
Petrifilm™	33	4.06	0.10	0	0	1	35	4.44	0.15	0	1	0	33	4.80	0.10	0	0	1
MPCA	20	4.08	0.09	0	0	1	20	4.41	0.14	0	1	0	20	4.80	0.11	0	0	0
TSA	12	4.06	0.11	0	0	0	12	4.47	0.24	0	0	0	12	4.93	0.10	0	0	0
TGE	6	4.10	0.15	0	0	0	6	4.32	0.20	0	0	0	6	4.72	0.25	0	0	0

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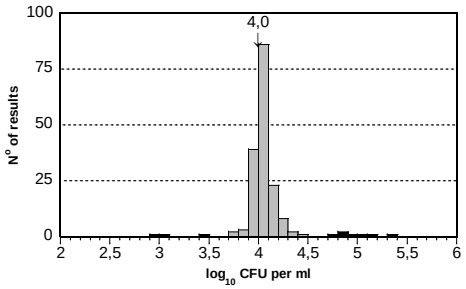

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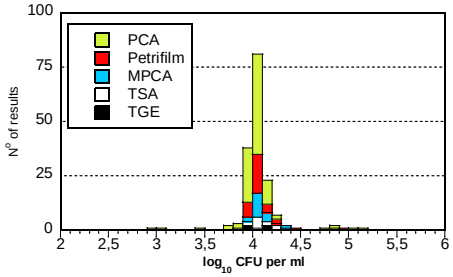

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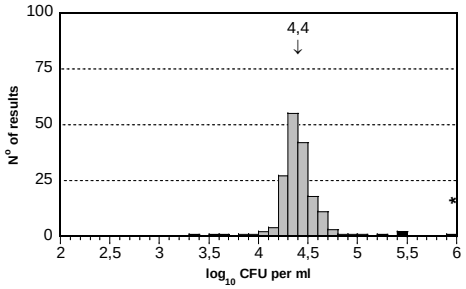

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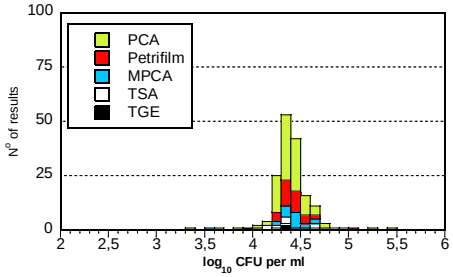

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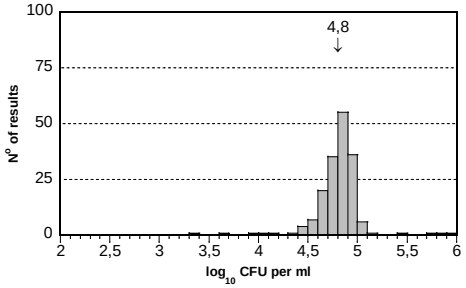

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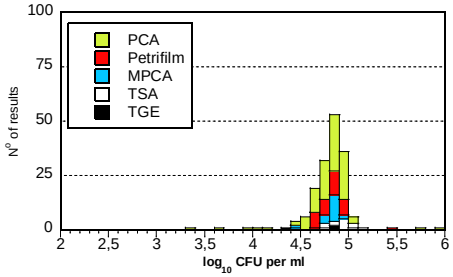

There are no significant differences in results depending on the medium chosen for the analysis of aerobic microorganisms at 20°C or 30°C. Many laboratories reported the use of the methods NMKL 86:2006 or ISO 4833:2003. Both methods have been withdrawn and replaced by NMKL 86:2013 and ISO 4833:2013, respectively.

Contaminating microorganisms in dairy products

Mixture A

At NFA, we counted three morphologically different types of colonies, indicating that the three strains present in mixture A can form colonies on sugar-free agar i.e. *Enteroccoccus faecium*, *Klebsiella pneumoniae* and *Escherichia coli*.

Mixture B
All strains present in mixture B could form colonies on sugar-free agar.

Mixture C
As for the analysis of aerobic microorganisms, colonies are mainly from the strains of *Micrococcus spp*. and *S. aureus*.

Results of contaminating microorganisms analysis

Confirmation method	Mixture A						Mixture B						Mixture C					
	n	m	s	F	<	>	n	m	s	F	<	>	n	m	s	F	<	>
Total	19	3.80	0.37	0	1	1	19	4.06	0.42	0	0	0	19	4.62	0.51	0	0	0
None	11	3.98	0.09	0	0	1	11	4.16	0.37	0	0	0	11	4.51	0.58	0	0	0
Catalase	8	3.54	0.44	0	1	0	8	3.93	0.44	0	0	0	8	4.76	0.31	0	0	0

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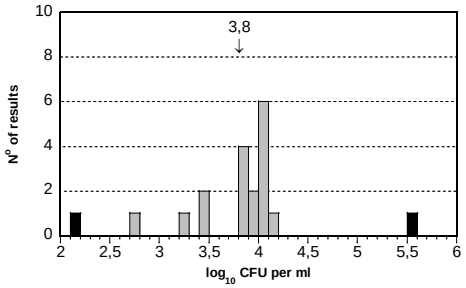

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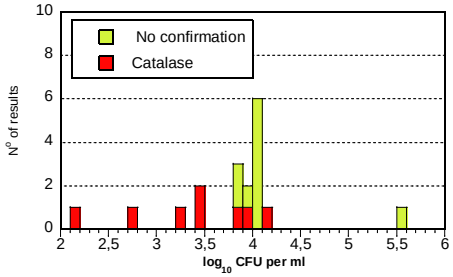

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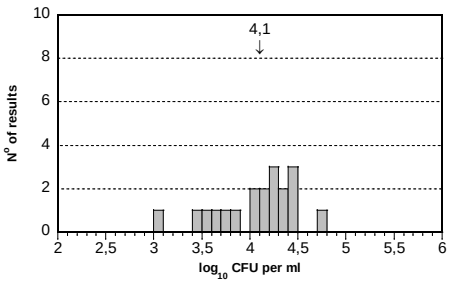

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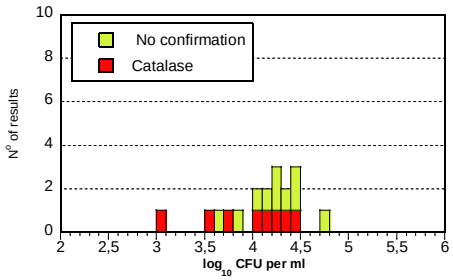

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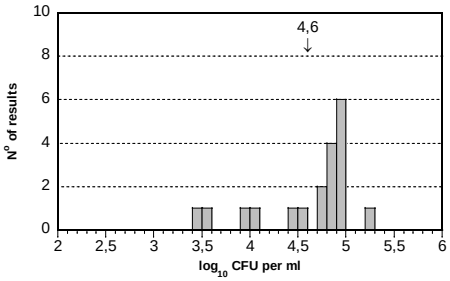

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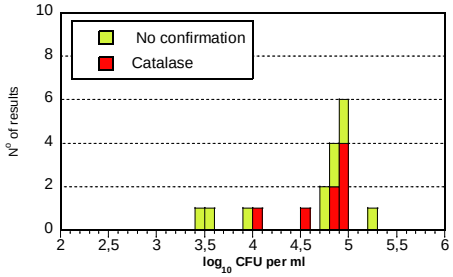

Few laboratories performed this analysis and the results are spread for all mixtures. Half of the laboratories reported to follow the standard method ISO 13559:2002 / IDF 153:2002, but all used the same medium, sugar-free agar. Almost half of the laboratories performed a catalase test. Mixture A contained a strain of *Enterococcus faecium*, present at the highest concentration and that is catalase negative. This could explain the slightly lower count of colonies reported when a catalase test was performed. To a minor extent the same effect appeared on the results obtained for mixture B, containing a strain of *Enterococcus durans* (catalase-negative). In mixture C, all strains were catalase positive.
The method ISO 13559:2002 / IDF 153:2002 does not state any confirmation test, but excludes pin-point colonies from the counting.

Enterobacteriaceae

Mixture A
Both *Escherichia coli* and *Klebsiella pneumoniae* were target-organisms for this analysis.

Mixture B
Both strains of *E. aerogenes* and *P. mirabilis* were target organism for this analysis. At NFA we observed two types of typical colonies on VRBG plates. Both were oxidase negative and therefore counted as enterobacteriaceae.

Mixture C
A strain of *Escherichia coli* was target-organism for this analysis

Results of enterobacteriaceae analysis

Medium	Mixture A						Mixture B						Mixture C					
	n	m	s	F	<	>	n	m	s	F	<	>	n	m	s	F	<	>
Total	133	3.35	0.13	1	2	4	134	3.71	0.22	2	1	4	133	3.02	0.17	0	5	6
VRBG	104	3.34	0.12	1	1	2	105	3.68	0.21	2	0	2	104	3.00	0.17	0	4	2
Petrifilm™	21	3.37	0.16	0	1	1	21	3.86	0.18	0	1	1	21	3.11	0.12	0	1	3

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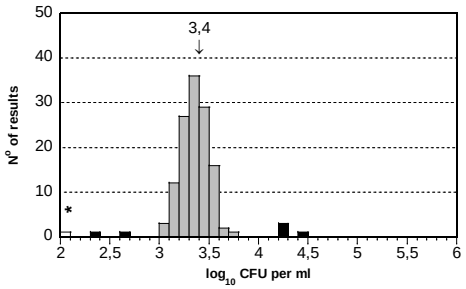

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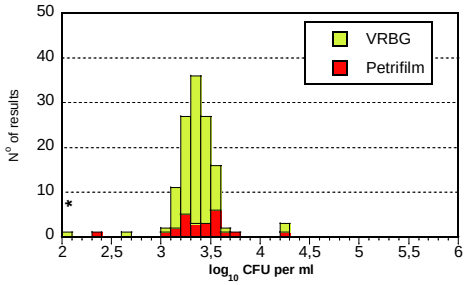

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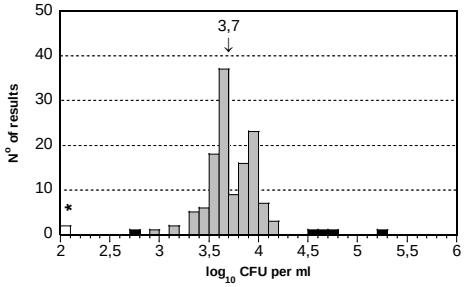

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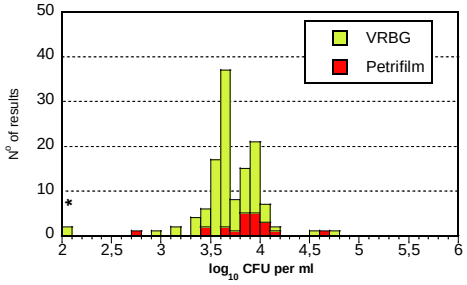

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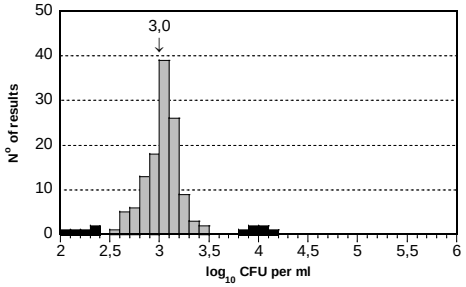

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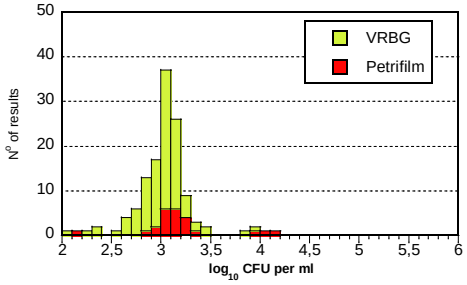

The results for mixture B form two peaks centered around 3.7 and 4.0 partly linked to the use of VRBG and Petrifilm™, respectively. For mixture C, laboratories using Petrifilm™ reported also values slightly higher than those using VRBG. This suggests that some strains have a better recovery on Petrifilm™ and/or that the indicator dye present in Petrifilm™ facilitated the reading of colonies and therefore led to a higher counts for mixture B and C.

Coliform bacteria, 30°C and 37°C

Mixture A

Both *Escherichia coli* and *Klebsiella pneumoniae* were target-organisms for these analyses.

Mixture B

20% and 26% of the laboratories reported negative results for the analysis of coliforms at 30°C and 37°C, respectively.

Enterobacter aerogenes was target-organism for these analyses. At NFA, we observed the growth of two morphologically different types of colonies on VRB plates. Only one type was surrounded by a red precipitation zone and showed a weak gas production when tested for lactose fermentation in brilliant green lactose broth (BGB). We performed the analyses of coliforms on mixture B several time and repeatedly observed low gas production in BGB that was difficult to interpret as positive or negative. In parallel, the strain of *E. aerogenes* present in mixture B was also tested and we observed no or weak gas production in BGB. Taking into account these additional tests, negative results reported after confirmation in BGB should be evaluated as correct.

Considering the characteristics of the target-organism and the variability in interpretation depending on confirmation method, the results are not evaluated and therefore no z-scores are calculated. Moreover, these results are not taken into account in the tables under the box plots.

Mixture C

A strain of *Escherichia coli* was target-organism for these analyses

Results of coliform bacteria analysis, 30°C

Medium	Mixture A						Mixture B*						Mixture C					
	n	m	s	F	<	>	n	m	s	F	<	>	n	m	s	F	<	>
Total	49	3.34	0.19	0	0	1	50	3.73	0.15	10	2	1	49	2.99	0.27	1	0	0
VRB	36	3.31	0.19	0	0	1	37	3.72	0.30	8	2	1	36	2.98	0.27	0	0	0
TSA/VRB	5	3.44	0.08	0	0	0	5	3.88	0.12	1	0	0	5	3.16	0.08	1	0	0

* = Results not evaluated. Negative and positive results are correct depending on the confirmation test used.

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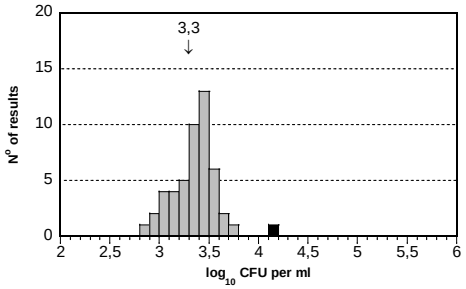

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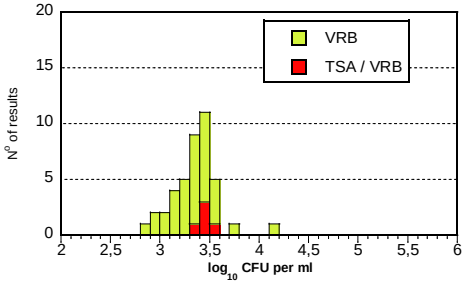

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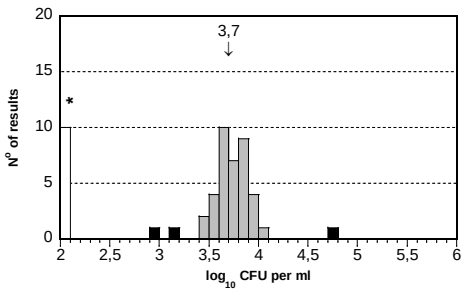

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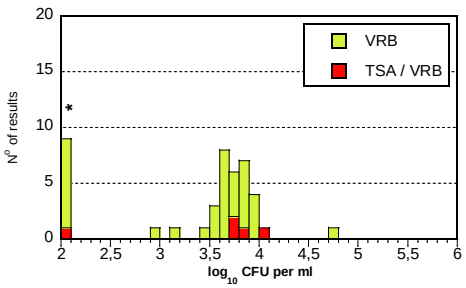

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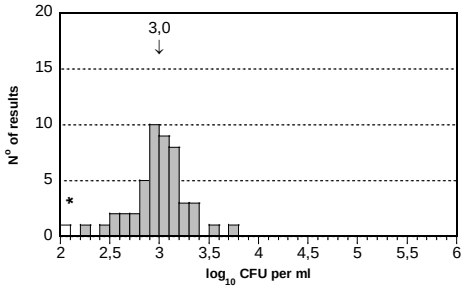

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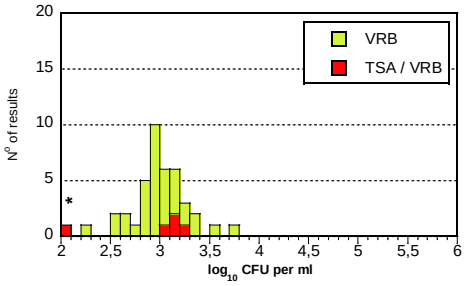
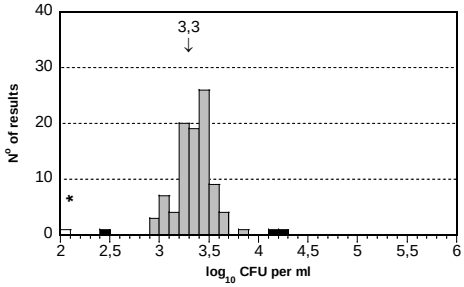


Results of coliform bacteria analysis, 37°C

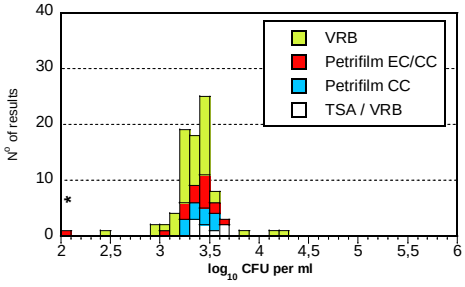
Medium	Mixture A						Mixture B*						Mixture C					
	n	m	s	F	<	>	n	m	s	F	<	>	n	m	s	F	<	>
Total	97	3.34	0.17	1	1	2	99	3.63	0.29	26	0	1	98	3.04	0.18	4	5	2
VRB	49	3.31	0.15	0	1	2	50	3.66	0.23	15	0	1	50	2.97	0.20	1	3	2
Petrifilm™EC/CC	15	3.40	0.12	1	0	0	15	3.62	0.36	1	0	0	15	3.10	0.06	1	1	0
Petrifilm™CC	12	3.39	0.11	0	0	0	12	3.45	0.25	1	0	0	12	3.14	0.09	0	0	0
TSA/VRB	8	3.46	0.11	0	0	0	8	3.80	0.12	3	0	0	8	3.15	0.10	1	0	0

* = Results not evaluated. Negative and positive results are correct depending on the confirmation test used.

A



A



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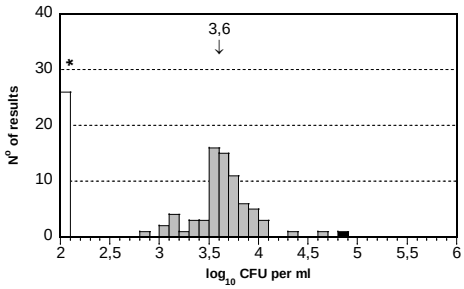

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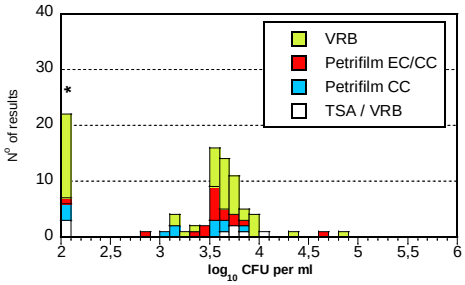

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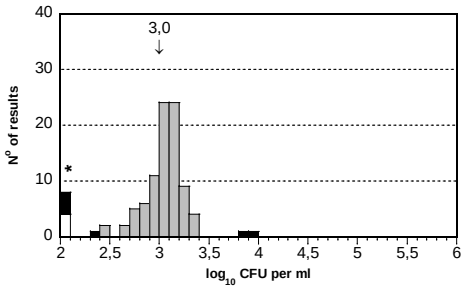

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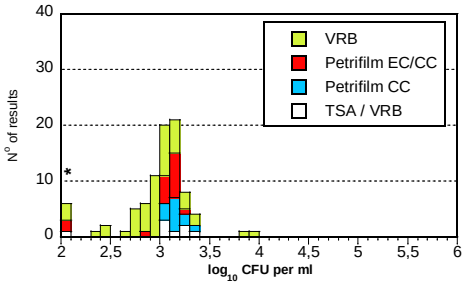


For the three mixtures and at both temperatures, results were slightly higher when analyses were performed with TSA/VRB. Pre-incubation in TSA can help for a better recovery if bacteria were stressed in the sample and is recommended in method NMKL 86:2004.

The negative results obtained for mixture B are mainly linked to the use of VRB, medium prescribed in the methods NMKL 44:2004 and ISO 4832:2006. Both methods describe a confirmation step using BGB. Lactose fermentation, characteristic of coliform bacteria, is visualized by gas production in BGB. However this broth is very selective and some coliform strains can give a negative result for lactose fermentation.

Most laboratories using Petrifilm™ did not have difficulty to identify coliforms in mixture B even though it is also based on the visualization of gas due to lactose fermentation. This strongly suggests that the high selectivity of BGB is the cause of the higher number of false negative reported for mixture B.

Thermotolerant coliform bacteria and Escherichia coli

Mixture A
Both *Escherichia coli* and *Klebsiella pneumoniae* are thermotolerant coliform bacteria. At NFA, two types of colonies could clearly be distinguished on TSA/VRBG after incubation at 44°C. Both fermented lactose at 44°C, but only one type was positive for the indol test, i.e. colonies from the strain of *E. coli.*

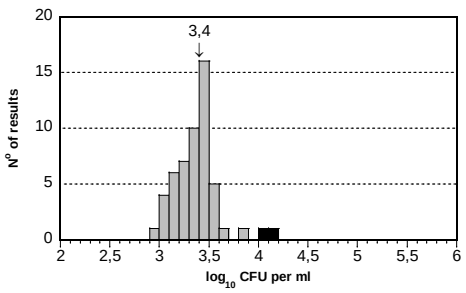
Mixture B
Mixture B did not contain any target-organism for these two analyses; however, 9 laboratories reported the presence of thermotolerant coliform. In previous tests at NFA, *E. aerogenes* formed small colonies on VRG plates after incubation at 43°C. This could explain the false positive results if the incubation temperature was too low.

Mixture C
A strain of *Escherichia coli* was target-organism for these analyses

Results of thermotolerant coliforms analysis

Medium	Mixture A						Mixture B						Mixture C					
	n	m	s	F	<	>	n	m	s	F	<	>	n	m	s	F	<	>
Total	53	3.34	0.18	0	0	2	53	-	-	9	-	-	52	3.07	0.17	0	0	2
TSA/VRB	24	3.40	0.17	0	0	1	24	-	-	2	-	-	24	3.13	0.15	0	0	1
VRB	11	3.34	0.11	0	0	1	11	-	-	1	-	-	11	3.01	0.18	0	0	1
EC medium	8	3.26	0.23	0	0	0	8	-	-	1	-	-	7	3.03	0.16	0	0	0
Petrifilm™ EC/CC	7	3.27	0.10	0	0	0	7	-	-	4	-	-	7	3.05	0.08	0	0	0

A



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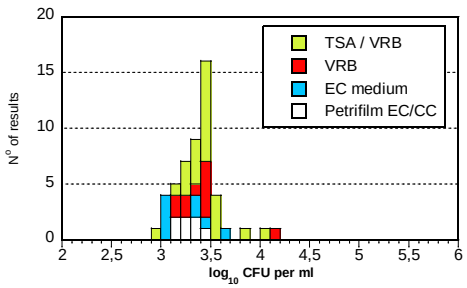

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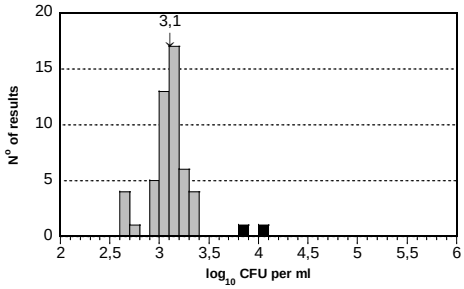

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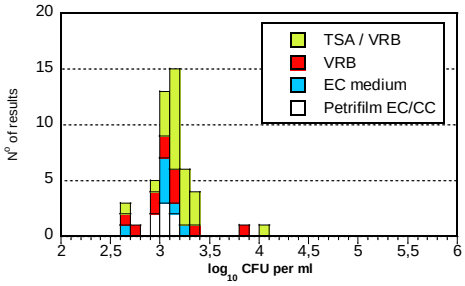
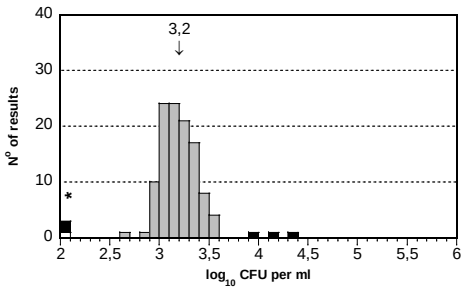


Results of E.coli analysis

Medium	Mixture A						Mixture B						Mixture C					
	n	m	s	F	<	>	n	m	s	F	<	>	n	m	s	F	<	>
Total	116	3.17	0.17	1	2	3	115	-	-	0	-	-	116	3.05	0.18	6	2	4
Petrifilm™EC/CC	25	3.10	0.15	0	1	0	25	-	-	0	-	-	25	3.07	0.10	1	1	0
Petrifilm™SEC	17	3.21	0.12	0	0	1	17	-	-	0	-	-	18	3.08	0.11	1	0	2
TSA/VRB	23	3.27	0.16	1	0	0	23	-	-	0	-	-	23	3.07	0.19	0	0	0
TBX	15	3.09	0.11	0	0	1	15	-	-	0	-	-	15	2.92	0.23	1	0	1
VRB	11	3.26	0.14	0	0	0	10	-	-	0	-	-	10	3.08	0.17	0	0	0

A



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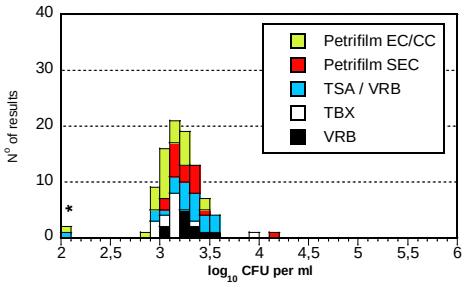

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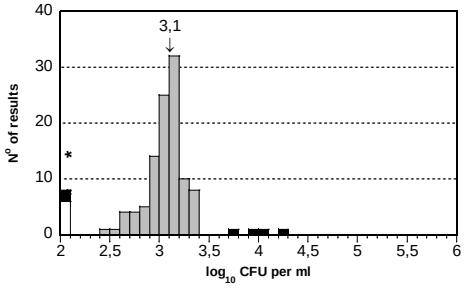

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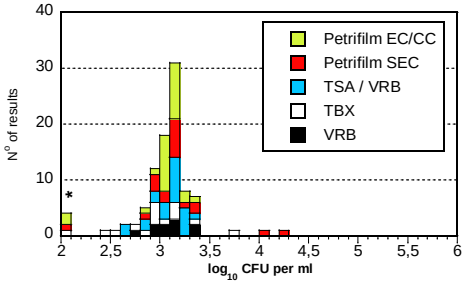


Half of the laboratories that reported a false positive results for the analysis of thermotolerant coliform bacteria in mixture B used Petrifilm™. Incubation temperature of Petrifilm™ EC/CC varies depending on the method: AOAC 991.14 and AOAC 998.08 state an incubation at 35±1°C while AFNOR 3M 01/2-09/89C states an incubation at 44±1°C. These differences could explain the false positive results as *E. aerogenes* can form colonies at temperature lower than 44°C.

For the analysis of *E. coli*, there is no statistically significant difference between the reported results depending on the medium used. However it can be noticed that the use of chromogenic medium TBX led to lower results compared to the total average: 3.09 versus 3.17 and 2.92 versus 3.05 for mixture A and C, respectively. On this medium which reveals the presence of β-glucuronidase activity, only colonies of *E. coli* appear typical (*K. pneumoniae* does not

produce β-glucuronidase enzyme). For mixture A, higher results were reported with TSA/VRB. On VRB with or without TSA, *E. coli* and *K. pneumoniae* form typical colonies that could be counted as *E. coli* if confirmation is not performed or performed only on colonies of *E. coli*.

Presumptive *Bacillus cereus*

Mixture A
Mixture A did not contain any target-organism for this analysis.

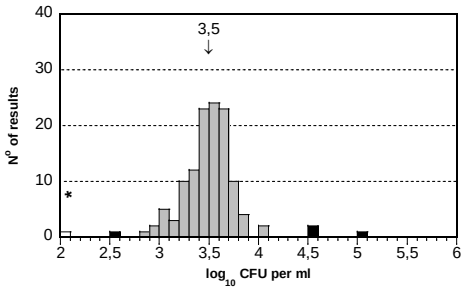
Mixture B
There was no target-organism for this analysis.

Mixture C
Mixture C contained a typical strain belonging to the *Bacillus cereus* group.

Results of presumptive B. cereus analysis

Medium	Mixture A						Mixture B						Mixture C					
	n	m	s	F	<	>	n	m	s	F	<	>	n	m	s	F	<	>
Total	123	-	-	2	-	-	123	-	-	5	-	-	124	3.48	0.21	1	1	3
BA + BcS	31	-	-	0	-	-	31	-	-	1	-	-	31	3.56	0.17	0	0	0
BA	27	-	-	1	-	-	28	-	-	2	-	-	27	3.41	0.23	0	0	0
MYP + BA	18	-	-	1	-	-	18	-	-	1	-	-	18	3.40	0.23	1	0	1
MYP	18	-	-	0	-	-	18	-	-	0	-	-	18	3.47	0.19	0	1	1
Chromogen	12	-	-	0	-	-	12	-	-	0	-	-	12	3.42	0.19	0	0	1

C



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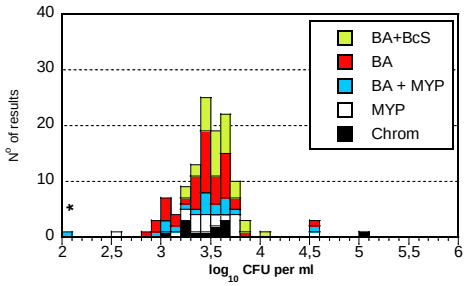


The NMKL method 67:2010 describes the confirmation of suspected colonies from blood-agar plates on BcS agar or Cereus-Ident-Agar (chromogenic medium) while the ISO method 7932:2004 describes first an isolation on MYP medium followed by a confirmation of suspected colonies on blood-agar. There were no results differences depending on the method used. Lower values forming a small peak centered around 3.0 were mainly linked to the use of BA only.

Coagulase-positive *Staphylococci*

Mixture A
Mixture A did not contain any target-organism for this analysis

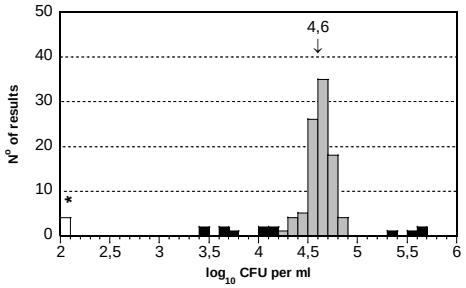
Mixture B
There was no target-organism for this analysis.

Mixture C
A strain of *Staphylococcus aureus* was target-organism for this analysis.

Results of coagulase-positive Staphylococci analysis

Medium	Mixture A						Mixture B						Mixture C					
	n	m	s	F	<	>	n	m	s	F	<	>	n	m	s	F	<	>
Total	108	-	-	3	-	-	110	-	-	0	-	-	110	4.61	0.12	4	9	4
BP	69	-	-	1	-	-	69	-	-	0	-	-	70	4.61	0.11	2	8	4
BP + RPF	20	-	-	1	-	-	20	-	-	0	-	-	20	4.62	0.06	1	1	0
Petrifilm™ Staph	11	-	-	1	-	-	14	-	-	0	-	-	13	4.64	0.14	0	0	0

C



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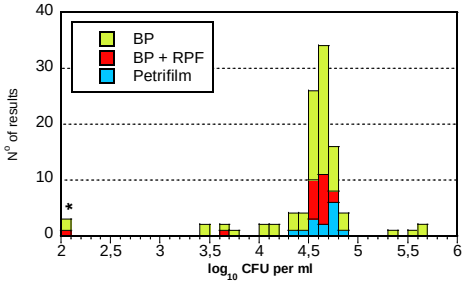


There is no difference in results depending on the medium used for this analysis.

Enterococci

Mixture A
A strain of *Enterococcus faecium* was target-organism for this analysis.

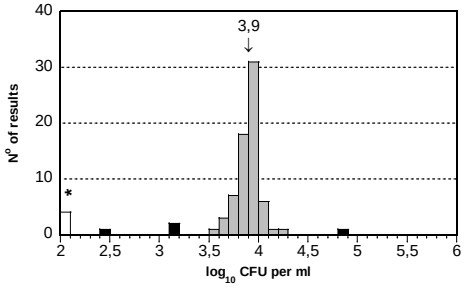
Mixture B
A strain of *Enterococcus durans* was target-organism for this analysis.

Mixture C
Mixture C did not contain any target-organism for this analysis.

Results of enterococci analysis

Medium	Mixture A						Mixture B						Mixture C					
	n	m	s	F	<	>	n	m	s	F	<	>	n	m	s	F	<	>
Total	76	3.89	0.11	4	3	1	75	4.19	0.29	1	3	0	75	-	-	2	-	-
S&B	56	3.89	0.12	3	3	1	55	4.18	0.24	1	3	1	56	-	-	0	-	-
TSA/S&B	10	3.91	0.07	1	0	0	10	4.21	0.24	0	0	0	9	-	-	2	-	-

A



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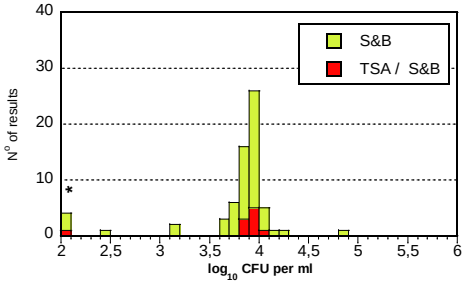

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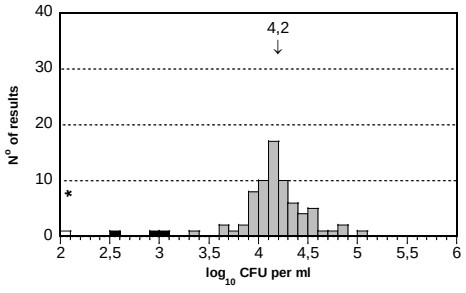

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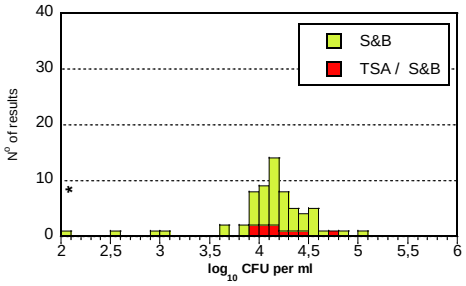


Most laboratories performing the analysis of *Enterococci* followed the method NMKL 68:2011 and / or used S&B agar. No differences in results depending on the medium or method used for this analysis could be seen.

For mixture B, we observed at NFA a weak blackening of bile-aesculin agar surrounding the colonies tested for confirmation after 2 hours of incubation, but the reaction was clearly positive after further incubation. This could explain the wider distribution of results for mixture B, depending on the time when confirmation plates were read.

Gram-negative bacteria in pasteurized milk and cream. Detection of recontamination.

Mixture A
Both *Escherichia coli* and *Klebsiella pneumoniae* were target-organisms for this analysis.

Mixture B
Both *Enterobacter aerogenes* and *Proteus mirabilis* were target-organisms for this analysis.

Mixture C
E. coli was target-organism for this analysis.

Results of gram-negative bacteria in dairy products analysis

Method	Mixture A						Mixture B						Mixture C					
	n	m	s	F	<	>	n	m	s	F	<	>	n	m	s	F	<	>
Total	9	-	-	0	-	-	9	-	-	0	-	-	9	-	-	0	-	-
NMKL 192:2011	8	-	-	0	-	-	8	-	-	0	-	-	8	-	-	0	-	-

The method NMKL 192:2011 describes a qualitative analysis for the detection of recontamination of dairy products by gram-negative bacteria. The method consists of a pre-incubation at 25˚C, 24h or at room temperature, 28h, followed by streaking 10 or 100µl of the sample on VRBG, respectively. The analysis did not cause any problem to participants.

Outcome of the results of individual laboratory - assessment

In order to allow comparison of the results from different analyses and mixtures, all the results of the analyses were transformed into standard values (z-scores). For quantitative analyses, a z-score is either positive or negative, depending on whether the individual result is higher or lower than the mean value calculated from all laboratory results for each analysis. For qualitative analyses, a z-score of zero is attributed for a correct answer. The z-scores obtained, which are listed in Annex 2, can be used as a tool by laboratories when following up on the results.

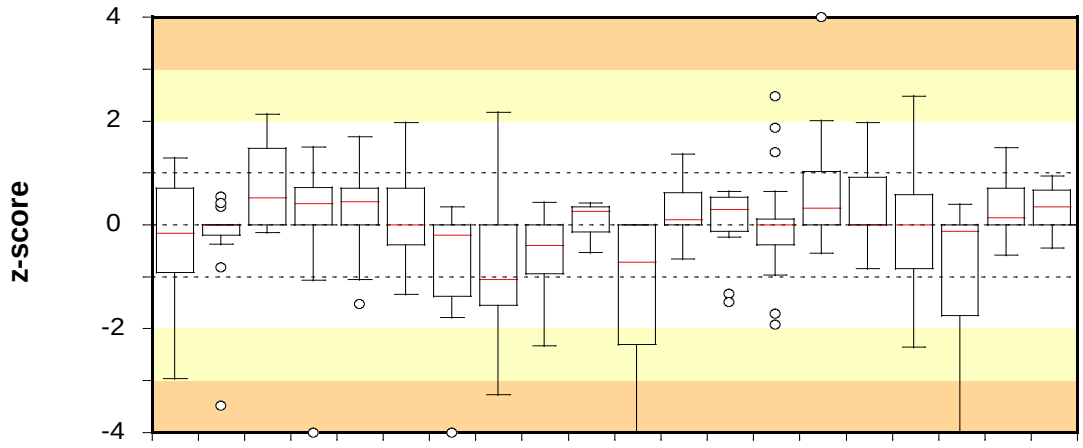
All the results from each laboratory – outliers included and false results excluded – were compiled into a box plot based on their z-scores. The smaller and more centred round zero the box of a laboratory is, the closer its results are to the general mean values calculated for all laboratory results.

The laboratories were not grouped or ranked based on their results. However, for each laboratory, the numbers of false results and outliers are presented below the box plots. These results are also highlighted in Annex 1, where all the reported results are listed, and the minimum and maximum accepted values for each analysis are stated.

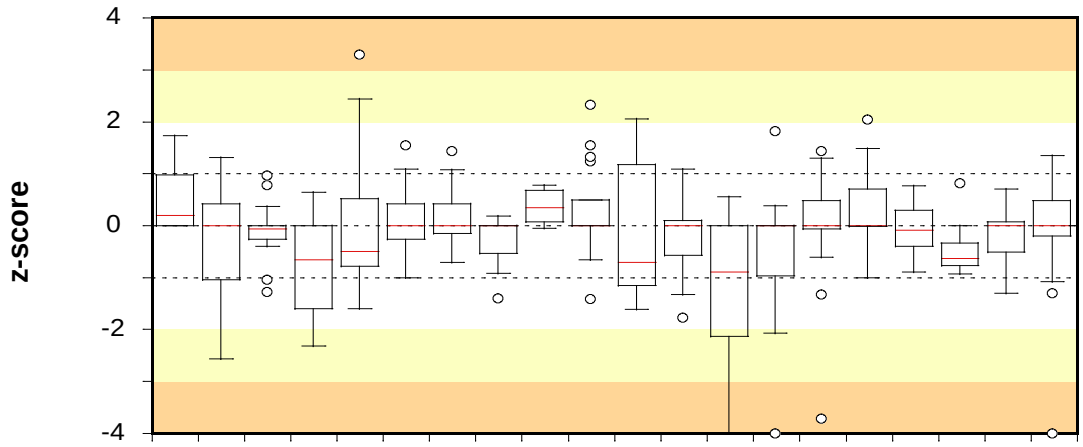
Information on the results processing and recommendations for follow-up work are given in the Scheme Protocol (2). Samples for follow-up can be ordered, free of charge via our website:www.slv.se/pt_extra

Box plots and numbers of deviating results for each laboratory

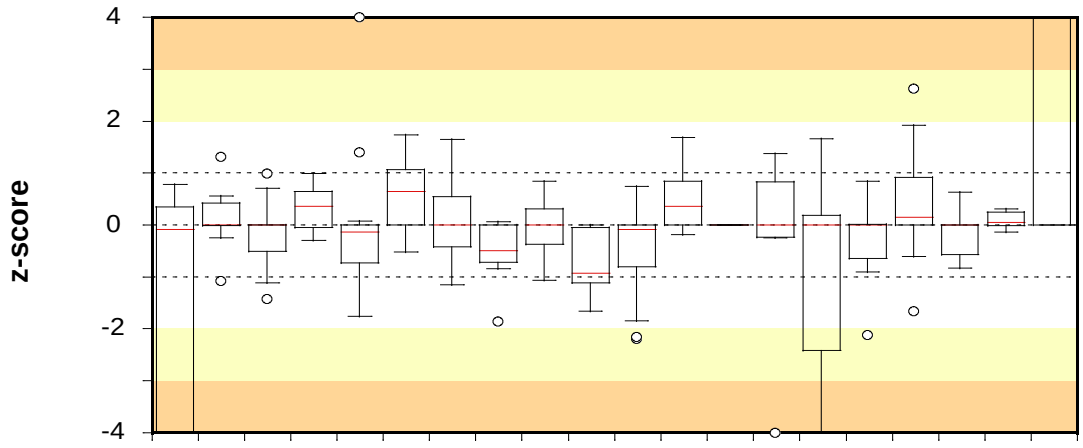
- *The plots are based on the laboratory results from all analyses transformed into z-scores calculated according to the formula: $z = (x-m)/s$, where x is the result of the individual laboratory, m is the mean of the results of all participating laboratories, and s is the standard deviation.*
- *Correct results for quantitative analyses without target organism and for qualitative analyses generate a z-value of 0.*
- *The laboratory median value is illustrated by a horizontal red line in the box.*
- *The box includes 50 % of a laboratory's results (25 % of the results above the median and 25 % of the results below the median). The remaining 50 % are illustrated by lines and circles outside the box.*
- *Very deviating results are represented by circles and are calculated as follow: the lowest result in the box − 1.5 × (the highest result in the box − the lowest result in the box) or the highest result in the box + 1.5 × (the highest result in the box − the lowest result in the box). z-scores higher than +4 and less than −4 are positioned at +4 and −4, respectively, in the plot.*
- *The background is divided by lines and shaded fields to indicate ranges in order to simplify location of laboratory results.*



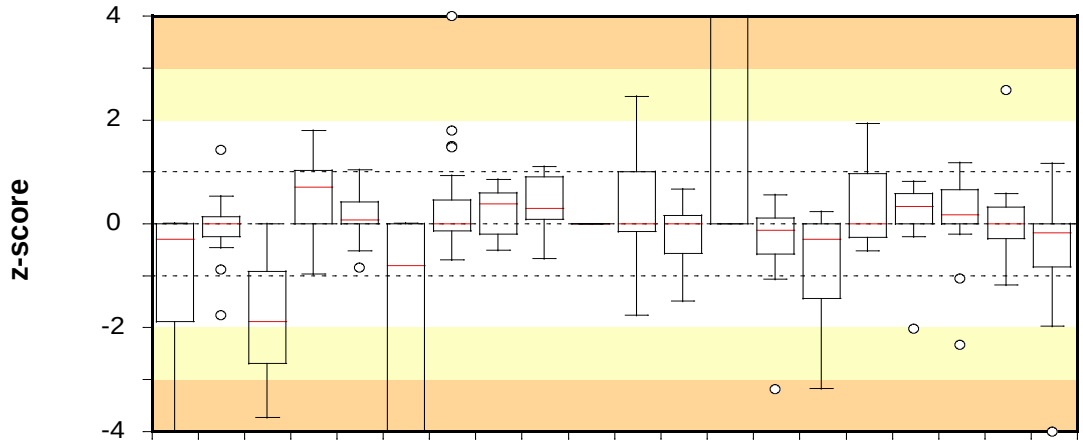
Lab no	1081	1149	1290	1594	1970	2035	2058	2072	2086	2109	2324	2386	2402	2458	2459	2637	2659	2670	2704	2720
No. of results	6	17	17	23	28	13	11	22	17	3	18	13	11	27	16	20	13	14	17	9
False positive	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
False negative	-	-	-	2	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Low outliers	-	-	-	1	-	-	1	-	-	-	2	-	-	-	-	-	-	2	-	-
High outliers	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-



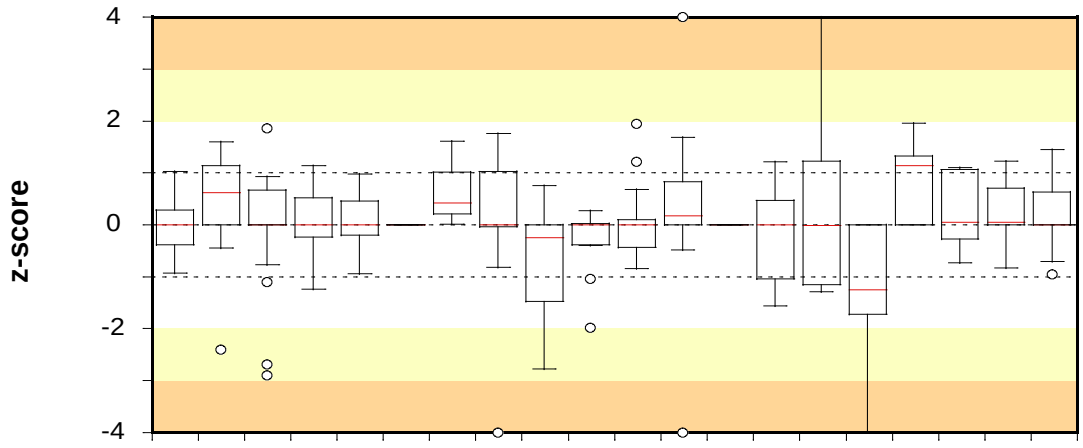
Lab no	2745	2757	2764	2842	2941	3055	3159	3225	3243	3305	3452	3457	3533	3543	3587	3626	3652	3831	3864	3868
No. of results	18	14	14	11	14	11	19	12	6	18	5	15	14	17	19	25	5	9	9	28
False positive	-	-	-	1	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
False negative	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2	-	-
Low outliers	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	1
High outliers	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



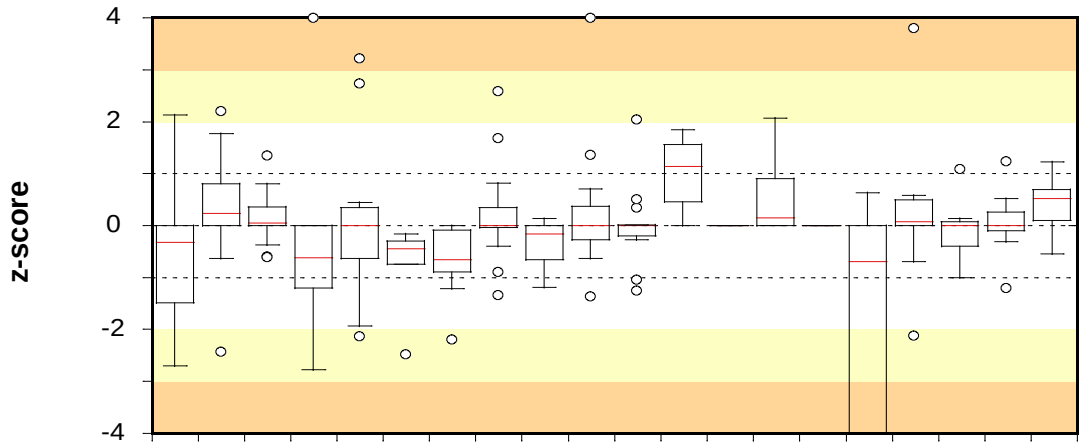
Lab no	3925	4047	4050	4064	4100	4153	4171	4246	4266	4278	4288	4339	4352	4400	4557	4562	4633	4635	4664	4683
No. of results	5	15	17	6	20	22	14	16	11	9	26	25	-	9	14	20	24	15	7	22
False positive	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-
False negative	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Low outliers	2	-	-	-	-	-	-	-	-	-	-	-	-	1	3	-	-	-	-	-
High outliers	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15



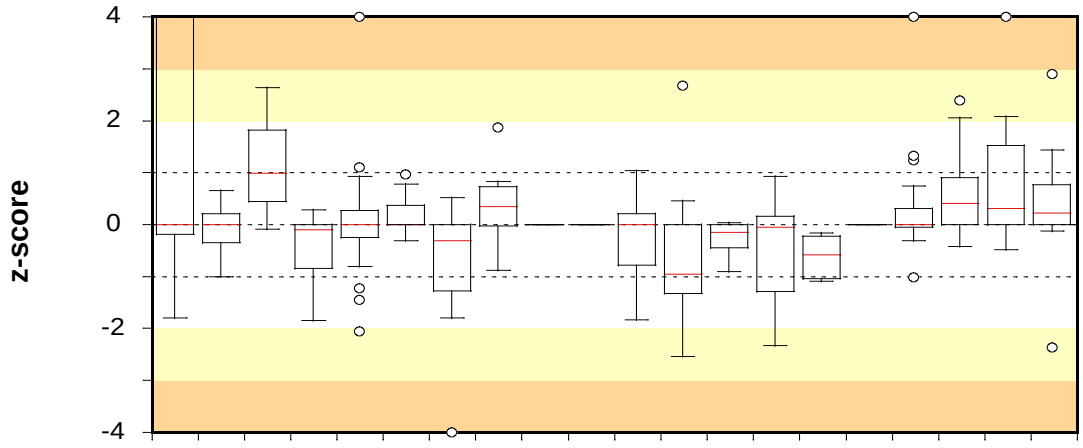
Lab no	4840	4889	4951	4955	4980	4998	5018	5100	5119	5162	5197	5201	5204	5220	5250	5290	5304	5329	5333	5352
No. of results	18	26	10	20	17	9	24	5	8	-	14	16	23	12	8	4	11	21	22	23
False positive	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-
False negative	-	-	1	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-
Low outliers	2	-	1	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	1
High outliers	-	-	-	-	-	-	1	-	-	-	-	-	14	-	-	-	-	-	-	-



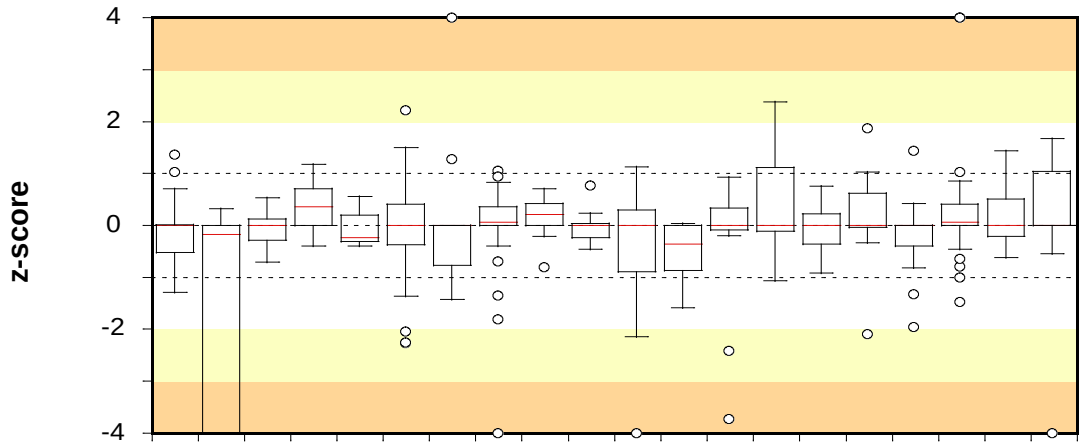
Lab no	5419	5446	5545	5553	5615	5632	5701	5764	5801	5808	5883	5950	5993	6109	6175	6220	6224	6232	6253	6343
No. of results	21	18	18	11	20	-	3	9	9	11	15	34	-	8	6	11	9	6	23	13
False positive	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
False negative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Low outliers	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	1	-	-	-	-
High outliers	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-



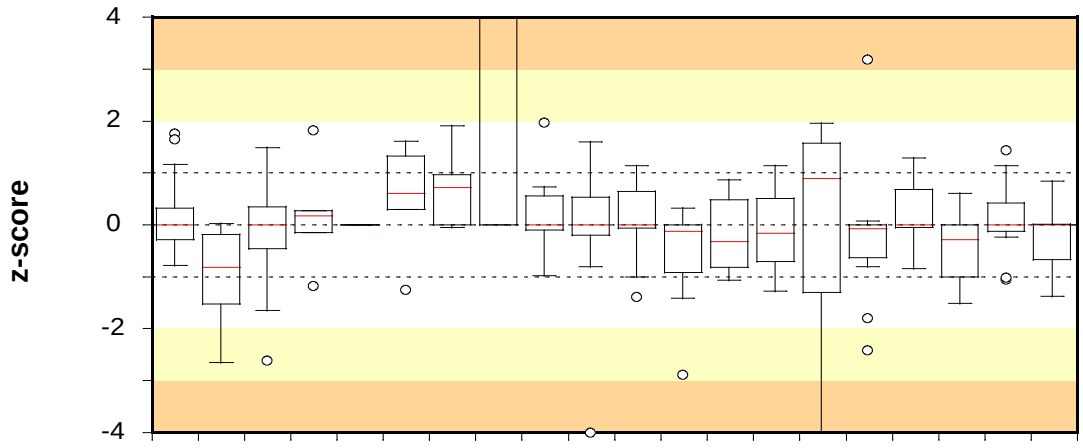
Lab no	6352	6368	6456	6490	6594	6628	6658	6686	6720	6728	6730	6762	6852	6885	6944	6958	6971	7024	7096	7182
No. of results	20	23	24	9	14	5	9	17	16	13	14	9	-	18	-	9	9	9	19	12
False positive	-	-	1	3	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
False negative	-	-	-	3	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-
Low outliers	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-
High outliers	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-



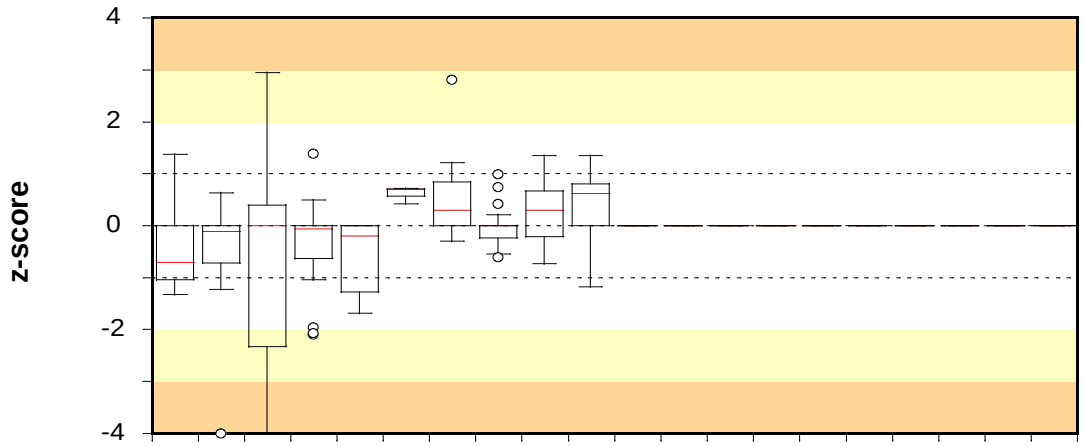
Lab no	7191	7207	7232	7242	7248	7253	7334	7449	7533	7543	7564	7596	7617	7627	7631	7655	7688	7728	7750	7825
No. of results	18	12	3	9	23	17	13	8	-	-	28	28	14	8	8	-	28	20	11	16
False positive	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-
False negative	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Low outliers	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
High outliers	6	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	2	-	1	-



Lab no	7876	7882	7906	7930	7940	7962	7984	8068	8105	8213	8260	8313	8333	8352	8397	8428	8430	8435	8523	8529
No. of results	17	9	17	25	5	25	12	28	11	15	19	18	14	22	16	23	14	28	12	21
False positive	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
False negative	1	1	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
Low outliers	-	3	-	-	-	-	-	1	-	-	1	-	1	-	-	-	-	-	-	1
High outliers	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	2	-	-



Lab no	8568	8626	8628	8657	8696	8734	8742	8756	8766	8891	8909	8918	9007	9034	9078	9217	9429	9436	9451	9453
No. of results	14	13	28	6	-	6	25	14	18	17	20	17	8	12	7	11	28	25	28	18
False positive	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
False negative	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Low outliers	-	-	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-	-	-
High outliers	-	-	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-



Lab no	9512	9559	9569	9662	9747	9783	9890	9903	9923	9950
No. of results	9	23	27	22	6	3	20	18	15	11
False positive	-	-	-	-	-	-	-	-	2	1
False negative	-	-	1	-	-	-	-	-	-	-
Low outliers	-	2	4	-	-	-	-	-	-	-
High outliers	-	-	-	-	-	-	-	-	-	-

Test material and quality control

Test material

Each laboratory received three freeze-dried microbial mixtures designated A-C. The manufactured test material was freeze-dried in portions of 0.5 ml in vials, as described by Peterz and Steneryd (3). Before analysing the samples, the contents of each vial had to be dissolved in 254 ml of diluent. The organisms present in the mixtures are listed in Table 2.

Table 2. *Microorganisms present in mixture A-C supplied to participants*

Mixture [1]	Microorganism	Strain no.
A	*Klebsiella pneumoniae*	SLV-186
	Escherichia coli	SLV-165
	Enterococcus faecium	SLV-459
B	*Enterobacter aerogenes*	SLV-099
	Proteus mirabilis	SLV-180
	Enterococcus durans	SLV-078
C	*Micrococcus spp.*	SLV-055
	Escherichia coli	SLV-524
	Bacillus cereus	SLV-518
	Staphylococcus aureus	SLV-280

[1]The links between the mixtures and the randomised sample numbers are shown in annex 1

Quality control of the mixtures

It is essential to have aliquots of homogeneous mixture and equal volume in all vials in order to allow comparison of all freeze-dried samples from one mixture. Quality control was performed in conjunction with manufacturing of the mixtures according to Scheme Protocol (2). The results are presented in Table 3. Homogeneity requires that the standard deviation and the difference between the highest and lowest value of results from 10 samples analysed do not exceed 0.15 $\log_{10}$ units and 0.5 $\log_{10}$ units, respectively.

Table 3. *Concentration mean (m) and standard deviation (s) from analyses of 10 randomly selected vials per mixture, expressed in $\log_{10}$ cfu (colony forming units) per ml of sample.*

Analysis and method	A		B		C	
	m	s	m	s	m	s
Aerobic microorganisms 30˚C NMKL-method no. 86	4.07	0.03	4.42	0.04	4.88	0.06
Aerobic microorganisms 20˚C NMKL-method no. 86	4.08	0.04	4.35	0.06	4.87	0.05
Contaminating microorganisms ISO-method no. 13559:2002 IDF-method no. 153:2002	4.07	0.03	4.35	0.06	4.93	0.05
Enterobacteriaceae NMKL-method nr. 144	3.47	0.08	4.03	0.04	3.23	0.05
Coliform bacteria 30˚C NMKL-method no. 44	3.36	0.11	3.66	0.06	3.16	0.06
Coliform bacteria. 37˚C NMKL-method no. 44	3.43	0.06	3.65	0.04	3.12	0.07
Thermotolerant coliform bacteria NMKL-method no. 125	3.46	0.08	-	-	3.24	0.04
Escherichia coli NMKL-method no. 125	2.99*	0.14*	-	-	3.24	0.04
Presumptive *Bacillus cereus* NMKL-method no. 67	-	-	-	-	3.59	0.07
Coagulase-positive *Staphylococci* NMKL-method no. 66	-	-	-	-	4.74	0.07
Enterococci NMKL-method no. 68	3.93	0.03	4.15	0.04	-	-
Gram-negative bacteria in pasteurized milk and cream. Detection of recontamination NMKL-method no. 192	pos	-	pos	-	pos	-

– No target organism
* value obtained with Petrifilm™ SEC

References

1. Kelly. K. 1990. Outlier detection in collaborative studies. J. Assoc. Off. Anal. Chem. 73:58-64.
2. Anonymous. 2012. Protocol. Microbiology. Drinking Water & Food. The National Food Agency.
3. Peterz. M. Steneryd. A.C. 1993. Freeze-dried mixed cultures as reference samples in quantitative and qualitative microbiological examinations of food. J. Appl. Bacteriol. 74:143-148.

Annex 1

Results from the participating laboratories - October 2014

All results are expressed in log_{10} cfu per ml sample.
Results reported as "<value" have been regarded as zero (negative). Results regarded as " > value" are exluded in the calculations.
A dash in the table indicates that the analysis was not performed.
Outliers and false results are highlighted and summarized for each analysis in the end of the table.
Results from the analyses of coliforms at 30°C and 37°C in mixture B are not included in the calculation of z-values (Annex 2) neither in the number of deviant results (Boxplot).

Lab nr.	Provnr.			Aerobic microorganisms 30 °C			Aerobic microorganisms 20 °C			Contaminating microorganisms			Enterobacteriaceae			Coliform bacteria 30 °C			Coliform bacteria 37 °C			Thermotolerant colif. Bacteria			Escherichia coli			Presumptive Bacillus cereus			Coagulase-positive staphylococci			Enterococci			Gram neg bacteria in dairy prod.			Lab nr.
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	
1081	3	1	2	4.04	4.6	4.9	-	-	-	-	-	-	3.23	3.64	2.52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1081**
1149	1	3	2	3.7	4.34	4.78	-	-	-	-	-	-	3.34	3.67	3.11	-	-	-	3.4	3.59	3.11	-	-	-	3.04	<1	3	<1	<1	3.48	<2	<2	4.6	-	-	-	-	-	-	**1149**
1290	1	2	3	4.09	4.73	4.99	-	-	-	-	-	-	3.59	3.86	3.3	3.59	3.82	3.39	-	-	-	-	-	-	3.15	<1	3.36	<1	<1	3.52	<1	<1	4.66	-	-	-	-	-	-	**1290**
1594	1	2	3	4.08	4.49	**3.3**	-	-	-	-	-	-	3.46	4.04	3.11	3.49	3.79	**<1**	3.41	3.77	**<1**	3.46	<1	3.2	3	<1	3.2	<1	<1	3.74	<2	<2	4.64	3.9	4.38	<1	-	-	-	**1594**
1970	3	1	2	4.02	4.47	4.81	4.01	4.47	4.59	-	-	-	3.57	3.57	3.11	3.43	3.79	3.15	3.62	3.72	3.11	3.46	<1	3.16	3.36	<1	3.16	<1	<1	3.81	<2	<2	4.81	3.72	4.57	<1	-	-	-	**1970**
2035	2	3	1	4	4.4	4.9	-	-	-	-	-	-	3.3	**<2**	2.8	-	-	-	3.4	3.5	2.8	-	-	-	3.5	<1	3.2	<1	<1	3.7	-	-	-	-	-	-	-	-	-	**2035**
2058	1	2	3	**3.4**	4.2	4.6	-	-	-	-	-	-	-	-	-	-	-	-	3.4	**<1**	3	-	-	-	3.2	<1	2.97	<1	<1	3.1	-	-	-	-	-	-	-	-	-	**2058**
2072	1	3	2	4.25	3.89	4.66	3.77	4.26	4.61	-	-	-	3.11	3.41	2.83	3.04	3.69	2.72	3.04	3.58	2.8	-	-	-	2.92	0	2.86	0	0	3.4	0	0	4.5	-	-	-	-	-	-	**2072**
2086	1	2	3	4	4.09	4.81	-	-	-	3.96	3.81	3.42	3.19	3.32	3.04	-	-	-	-	-	-	-	-	-	3.04	<1	**<1**	-	-	-	<2	<2	4.62	3.85	3.92	<1	-	-	-	**2086**
2109	1	2	3	4.08	4.44	4.73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2109**
2324	3	1	2	3.99	4.32	4.44	-	-	-	-	-	-	3.29	3.33	2.63	-	-	-	-	-	-	-	-	-	2.68	0	2.69	0	0	3.28	0	0	**4.16**	**3.12**	3.66	0	-	-	-	**2324**
2386	1	2	3	4.1	4.37	4.89	-	-	-	-	-	-	-	-	-	-	-	-	3.57	3.6	3.1	3.23	<1	3.09	-	-	-	<1	**1.9**	3.58	<2	<2	4.7	-	-	-	-	-	-	**2386**
2402	2	1	3	3.91	4.49	4.77	-	-	-	-	-	-	3.42	3.76	3.11	-	-	-	3.45	3.37	3.1	-	-	-	2.93	<1	3.1	-	-	-	-	-	-	-	-	-	-	-	-	**2402**
2458	2	1	3	3.97	4.69	4.87	-	4.67	4.85	-	-	-	3.31	3.65	3.08	3.23	3.62	2.91	3.3	3.64	2.94	3.27	0	2.91	3.12	0	2.71	0	0	3.48	0	0	4.64	3.7	4.59	0	-	-	-	**2458**
2459	3	2	1	4.05	4.43	4.86	3.95	4.45	4.88	-	-	-	-	-	-	-	-	-	3.36	3.15	3.26	-	-	-	3.38	<1	**4.28**	<1	-	3.65	<1	<1	4.85	-	-	-	-	-	-	**2459**
2637	2	1	3	4.1	4.4	4.9	-	-	-	-	-	-	3.5	3.6	3	-	-	-	3.6	**<1**	3.2	3.5	<1	3.3	3.5	<1	2.9	<1	<1	3.5	<1	<1	4.6	-	-	-	-	-	-	**2637**
2659	3	2	1	4.28	4.29	4.66	-	-	-	-	-	-	-	-	-	3.45	3.56	2.7	3.2	3.8	3.32	-	-	-	3.28	<1	3.15	-	-	-	<1	<1	4.34	-	-	-	-	-	-	**2659**
2670	3	1	2	4.01	4.46	**4.17**	-	-	-	-	-	-	-	-	-	-	-	-	3.04	**0**	3.04	3.04	0	3.04	3.04	0	3.04	-	-	-	0	0	**3.79**	-	-	-	-	-	-	**2670**
2704	2	3	1	4.18	4.43	4.9	-	-	-	-	-	-	3.54	3.87	2.99	-	-	-	3.59	3.79	3.09	-	-	-	3.08	<1	3.04	<1	<1	3.51	<2	<2	4.65	-	-	-	-	-	-	**2704**
2720	2	1	3	4.04	4.33	4.85	-	-	-	-	-	-	3.42	3.87	3.13	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.68	-	-	-	-	-	-	-	-	-	**2720**
2745	2	3	1	4.06	4.41	5.04	-	-	-	-	-	-	3.48	3.93	3.26	-	-	-	-	-	-	3.46	<1	3.08	3.3	<1	3.08	<1	<1	3.85	<2	<2	4.7	-	-	-	-	-	-	**2745**
2757	1	3	2	4.08	4.48	4.76	3.83	4.23	4.36	-	-	-	3.34	4	3.11	3.4	3.89	3.08	-	-	-	-	-	-	-	-	-	<1	<1	3.26	-	-	-	-	-	-	-	-	-	**2757**
2764	1	2	3	4	4.2	4.91	-	-	-	-	-	-	3.4	3.71	2.98	-	-	-	3.32	**<0,60**	2.99	-	-	-	-	-	-	<1	<1	3.26	-	-	-	4	4.15	<2	-	-	-	**2764**
2842	3	2	1	-	-	-	-	-	-	3.81	3.08	4	-	-	-	-	-	-	-	-	-	3.23	**2.9**	3.18	-	-	-	<1	<1	3.11	-	-	-	3.72	3.71	<1	-	-	-	**2842**
2941	1	3	2	4.36	4.48	4.74	-	-	-	-	-	-	3.23	3.55	2.75	3.19	3.5	2.66	-	-	-	-	-	-	3.2	-	3.2	-	-	4	-	-	4.54	3.83	4.13	-	-	-	-	**2941**
3055	2	3	1	3.95	4.51	4.82	-	-	-	-	-	-	3.22	3.95	2.93	-	-	-	-	-	-	-	-	-	-	-	-	**3.95**	0	3.81	-	-	-	-	-	-	Pos	Pos	Pos	**3055**
3159	2	3	1	3.97	4.37	4.78	-	-	-	-	-	-	3.54	3.92	3.08	-	-	-	3.28	3.63	3.1	3.32	**3.8**	3.15	3.08	<1	3.08	<1	<1	3.71	<1	<2	4.78	-	-	-	-	-	-	**3159**
3225	2	3	1	3.98	4.18	4.74	-	-	-	-	-	-	3.23	3.63	3.05	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.48	-	-	-	-	-	-	Pos	Pos	Pos	**3225**
3243	3	2	1	4.08	4.44	4.91	-	-	-	-	-	-	3.36	3.86	3.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3243**
3305	3	1	2	4.08	4.34	4.82	-	-	-	-	-	-	3.32	3.57	3.41	-	-	-	-	-	-	3.43	<1	3.28	3.43	<1	3.28	<1	<1	3.18	<2	<2	4.64	-	-	-	-	-	-	**3305**
3452	2	1	3	3.97	4.22	4.58	-	-	-	-	-	-	-	-	-	3.74	**0**	3.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3452**
3457	2	3	1	-	-	-	3.98	4.23	4.74	-	-	-	3.21	3.52	2.72	-	-	-	-	-	-	3.38	<1	3.16	-	-	-	-	-	-	<2	<2	4.74	3.94	4.14	<1	-	-	-	**3457**
3533	3	1	2	4.03	4.25	4.88	-	-	-	-	-	-	-	-	-	-	-	-	3.04	**<1**	2.66	3.04	<1	2.66	3.04	<1	2.66	-	-	-	<1	<1	**3.69**	-	-	-	-	-	-	**3533**
3543	3	2	1	4.06	4.34	4.67	-	-	-	-	-	-	3.08	4.11	2.9	-	-	-	-	-	-	-	-	-	2.96	<1	**<1**	<1	<1	3.09	<1	<1	**4.13**	3.93	4.3	<1	-	-	-	**3543**
m				4.039	4.399	4.802	4.004	4.383	4.751	3.798	4.064	4.615	3.351	3.712	3.017	3.341	3.733	2.993	3.341	3.633	3.035	3.344	0	3.072	3.175	0	3.048	0	0	3.480	0	0	4.613	3.891	4.189	0	pos	pos	pos	**m**
s				0.097	0.156	0.138	0.100	0.116	0.153	0.371	0.425	0.514	0.131	0.218	0.168	0.194	0.152	0.268	0.168	0.287	0.176	0.175	0	0.168	0.165	0	0.176	0	0	0.213	0	0	0.116	0.112	0.286	0	-	-	-	**s**

Lab nr.	Provnr.			Aerobic microorganisms 30 °C			Aerobic microorganisms 20 °C			Contaminating microorganisms			Enterobacteriaceae			Coliform bacteria 30 °C			Coliform bacteria 37 °C			Thermotolerant colif. Bacteria			Escherichia coli			Presumptive Bacillus cereus			Coagulase-positive staphylococci			Enterococci			Gram neg bacteria in dairy prod.			Lab nr.
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	
3587	1	2	3	4.03	4.53	4.62	-	-	-	-	-	-	3.48	2.9	3.04	3.25	3.91	2.83	3.56	3.58	3.03	-	-	-	3.18	<1	3.3	<1	<1	3.5	-	-	-	3.9	4.48	<1	-	-	-	3587
3626	1	3	2	4	4.42	4.88	-	-	-	-	-	-	3.35	3.6	2.85	3.34	3.62	2.88	3.34	3.62	2.91	3.42	<1	3.2	3.42	<1	3.2	<1	<1	3.63	<2	<2	4.85	4.03	4.57	<1	-	-	-	3626
3652	1	2	3	4	4.26	4.79	-	-	-	-	-	-	-	-	-	-	-	-	3.39	3.8	3.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3652
3831	3	1	2	3.97	4.28	4.73	3.92	4.31	4.61	-	-	-	-	-	-	-	-	-	**0**	3.77	**0**	-	-	-	3.31	0	2.99	-	-	-	-	-	-	-	-	-	-	-	-	3831
3864	3	2	1	3.95	4.32	4.9	-	-	-	-	-	-	3.18	3.78	3.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Pos	Pos	Pos	3864
3868	2	3	1	4.02	4.32	4.81	-	-	-	3.4	3.51	4.92	3.46	3.91	3	3.45	3.6	2.99	3.45	3.62	3	3.28	<1	3.12	3.02	<1	3.12	<1	<1	3.7	<1	<1	4.77	3.88	**3**	<1	-	-	-	3868
3925	2	1	3	4.03	4.52	4.85	-	-	-	-	-	-	-	-	-	-	-	-	**2.44**	3.6	**0.94**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3925
4047	3	1	2	4.08	4.36	4.8	-	-	-	-	-	-	3.21	4	3.09	-	-	-	-	-	-	-	-	-	3.15	<1	3.12	<1	<1	3.6	<1	<1	4.67	-	-	-	-	-	-	4047
4050	1	3	2	3.93	4.32	4.88	-	-	-	3.27	4	4.98	3.28	3.93	3.03	3.16	3.85	2.94	-	-	-	-	-	-	-	-	-	<1	<1	3.4	-	-	-	-	-	-	Pos	Pos	Pos	4050
4064	2	1	3	4.01	4.5	4.84	-	-	-	-	-	-	3.41	3.93	3.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4064
4100	2	1	3	**4.71**	4.36	4.56	-	-	-	-	-	-	3.23	3.41	2.95	-	-	-	3.23	3.34	2.92	-	-	-	2.96	<1	2.91	<1	<1	3.43	<2	<2	4.61	3.9	4.59	<1	-	-	-	4100
4153	1	3	2	4.04	4.49	4.96	-	-	-	-	-	-	3.34	3.93	3.18	3.32	3.86	3.18	3.54	3.85	3.34	3.53	<1	3.3	3.31	<1	3.3	<1	<1	3.63	-	-	-	3.9	4.04	<1	-	-	-	4153
4171	3	1	2	4.2	4.38	4.91	-	-	-	-	-	-	3.2	3.62	3.11	-	-	-	3.3	3.27	2.96	-	-	-	-	-	-	<1	<1	3.64	-	-	-	3.9	4	<2	-	-	-	4171
4246	2	1	3	3.97	4.29	4.75	3.92	4.3	4.66	-	-	-	3.24	3.66	2.98	-	-	-	3.23	**<1**	**<1**	-	-	-	2.87	<1	3.06	-	-	-	<2	<2	4.62	-	-	-	-	-	-	4246
4266	2	1	3	4.06	4.36	4.72	-	-	-	-	-	-	-	-	-	-	-	-	3.26	3.43	3.12	-	-	-	3	<1	3.12	-	-	-	<2	<2	4.71	-	-	-	-	-	-	4266
4278	3	2	1	3.93	4.14	4.61	-	-	-	-	-	-	3.22	3.51	3.01	-	-	-	-	-	-	-	-	-	-	-	-	<	<	3.34	-	-	-	-	-	-	-	-	-	4278
4288	2	3	1	3.96	4.34	4.76	-	-	-	3.83	4.38	4.91	3.3	3.76	2.65	-	-	-	3.41	3.5	2.92	3.15	<1	2.76	3.14	<1	2.86	<1	<1	3.45	<2	<2	4.61	3.65	3.88	<1	-	-	-	4288
4339	1	2	3	4.04	4.37	4.92	-	-	-	-	-	-	3.46	4	3.3	3.41	**<1**	3.13	3.46	**<1**	3.28	3.43	<1	3.3	3.2	<1	3.3	<1	<1	3.66	<2	<2	4.69	3.88	4.22	<2	-	-	-	4339
4352	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4352
4400	2	3	1	4.12	4.36	4.77	-	-	-	-	-	-	3.4	3.98	3.25	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	**2.59**	-	-	-	-	-	-	-	-	-	4400
4557	1	2	3	3.9	4.4	4.47	-	-	-	-	-	-	-	-	-	-	-	-	3.62	3.45	3.08	-	-	-	3.41	0	3.08	-	-	-	0	0	**3.41**	**2.4**	**2.98**	0	-	-	-	4557
4562	1	2	3	3.96	4.3	4.51	-	-	-	-	-	-	3.4	3.57	2.99	-	-	-	3.4	3.7	2.88	-	-	-	3.18	<1	3	<1	<1	3.66	<2	<2	4.68	3.79	4.11	<1	-	-	-	4562
4633	3	1	2	4.1	4.55	4.81	-	-	-	-	-	-	3.6	3.94	2.93	3.51	**<2**	2.55	3.51	**<2**	2.93	3.48	<1	3.1	3.14	<1	3.1	<2	<1	4.04	<1	<1	4.63	3.95	4.74	**1.3**	-	-	-	4633
4635	3	1	2	3.97	4.27	4.89	-	-	-	-	-	-	3.28	3.57	3.05	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.4	<1	<1	4.6	3.91	4.02	<1	-	-	-	4635
4664	1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.38	3.53	3.09	3.39	**3.9**	3.08	-	-	-	-	-	-	-	-	-	3.89	4.15	<1	-	-	-	4664
4683	2	3	1	**5.11**	**5.46**	**5.94**	-	-	-	-	-	-	**4.25**	**4.7**	**3.82**	**4.18**	**4.74**	3.7	**4.15**	**4.8**	**3.89**	**4.15**	<1	**3.89**	**3.94**	<1	**3.72**	<1	<1	**4.56**	<2	<2	**5.6**	-	-	-	-	-	-	4683
4840	1	3	2	4.04	4.36	**4.04**	-	-	-	-	-	-	**2.67**	3.16	2.7	-	-	-	-	-	-	-	-	-	3	<1	2.53	<1	<1	3.28	<1	<1	4.54	3.86	4.1	<1	-	-	-	4840
4889	3	2	1	4.04	4.36	4.85	4	4.18	4.73	-	-	-	3.3	3.52	3.04	-	-	-	3.43	3.59	3	3.41	0	3.11	3.41	0	3.11	0	0	3.41	0	0	4.56	3.9	4.08	0	-	-	-	4889
4951	1	3	2	3.95	3.98	4.3	-	-	-	-	-	-	3.02	3.37	**2.39**	-	-	-	2.98	3.37	**<1**	-	-	-	2.91	<1	2.96	-	-	-	-	-	-	-	-	-	-	-	-	4951
4955	1	3	2	4.07	4.52	4.91	-	-	-	-	-	-	3.48	3.96	3.32	-	-	-	3.52	**<1**	3.15	3.41	<1	2.91	3.3	<1	3.32	<1	<1	3.71	<2	<2	4.7	-	-	-	-	-	-	4955
4980	2	1	3	4.07	4.41	4.91	-	-	-	-	-	-	3.24	3.94	3.13	-	-	-	3.46	3.59	3.11	-	-	-	3.09	<1	3.11	<1	<1	3.54	<2	<2	4.57	-	-	-	-	-	-	4980
4998	1	3	2	4.04	4.39	4.67	-	-	-	-	-	-	**2.37**	**2.73**	**2.19**	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.31	-	-	-	-	-	-	-	-	-	4998
5018	3	2	1	4.01	4.35	5.05	-	-	-	-	-	-	3.26	3.76	3.04	3.52	3.76	3	3.23	3.78	3.3	3.38	<1	3	3.28	<1	3	<1	<1	3.54	<1	<1	**5.67**	**<1**	4.61	<1	-	-	-	5018
5100	1	2	3	4.02	4.32	4.92	-	-	-	-	-	-	-	-	-	-	-	-	-	3.78	3.14	-	-	-	3.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5100
5119	1	2	3	4.08	4.57	4.71	-	-	-	-	-	-	-	-	-	3.52	3.72	3.04	-	-	-	-	-	-	3.32	<1	3.08	-	-	-	-	-	-	-	-	-	-	-	-	5119
5162	1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5162
5197	2	3	1	4.23	4.52	4.72	-	-	-	-	-	-	3.52	3.68	2.95	-	-	-	-	-	-	-	-	-	3.34	<1	**<1**	-	-	-	<1	<1	4.41	3.9	4.89	<1	-	-	-	5197
5201	1	2	3	4.09	4.42	4.86	-	-	-	-	-	-	3.29	3.74	3.05	-	-	-	3.21	**<1**	3.05	-	-	-	2.93	<1	2.93	<1	**2.9**	3.33	<2	<2	4.69	-	-	-	-	-	-	5201
5204	2	1	3	**4.91**	5.05	**5.48**	-	-	-	-	-	-	**4.28**	**4.62**	**4.18**	-	-	-	**4.26**	3.81	**3.9**	**4.08**	<1	**4.04**	**4.12**	<1	**4.04**	<1	<1	**4.51**	<2	<2	**5.54**	**4.87**	5.02	<1	-	-	-	5204
5220	2	3	1	4.02	4.37	4.83	4.06	4.37	4.73	-	-	-	3.38	3.5	3.02	-	-	-	-	-	-	-	-	-	3	0	2.49	-	-	-	-	-	-	-	-	-	-	-	-	5220
5250	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.15	3.75	2.48	-	-	-	3.08	<1	2.75	<1	<1	3.53	-	-	-	-	-	-	-	-	-	5250
5290	2	1	3	-	4.7	-	-	-	-	-	-	-	-	3.6	-	-	3.63	-	-	3.72	-	-	-	-	-	<1	-	-	**1.23**	-	-	<2	-	-	-	-	-	-	-	5290
5304	2	1	3	4.09	4.36	4.89	-	-	-	-	-	-	-	-	-	-	-	-	3.4	**<1**	3.18	-	-	-	3.23	<1	3.18	-	-	-	<1	<1	4.38	-	-	-	-	-	-	5304
5329	2	1	3	4.03	4.45	4.93	4.07	4.42	4.92	-	-	-	3.46	3.67	3.08	-	-	-	-	-	-	3.16	<1	2.68	-	-	-	<1	<1	3.54	<2	<2	4.75	3.98	4.24	<1	-	-	-	5329
m				4.039	4.399	4.802	4.004	4.383	4.751	3.798	4.064	4.615	3.351	3.712	3.017	3.341	3.733	2.993	3.341	3.633	3.035	3.344	0	3.072	3.175	0	3.048	0	0	3.480	0	0	4.613	3.891	4.189	0	pos	pos	pos	**m**
s				0.097	0.156	0.138	0.100	0.116	0.153	0.371	0.425	0.514	0.131	0.218	0.168	0.194	0.152	0.268	0.168	0.287	0.176	0.175	0	0.168	0.165	0	0.176	0	0	0.213	0	0	0.116	0.112	0.286	0	-	-	-	**s**

Lab nr.	Provnr.			Aerobic microorganisms 30 °C			Aerobic microorganisms 20 °C			Contaminating microorganisms			Enterobacteriaceae			Coliform bacteria 30 °C			Coliform bacteria 37 °C			Thermotolerant colif. Bacteria			Escherichia coli			Presumptive Bacillus cereus			Coagulase-positive staphylococci			Enterococci			Gram neg bacteria in dairy prod.			Lab nr.
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	
5333	3	2	1	4.07	4.3	4.82	-	-	-	-	-	-	3.36	3.63	3.45	3.15	3.72	3.14	3.26	3.67	3.11	-	-	-	3.26	<1	3.15	<1	<1	3.23	<1	<1	4.6	3.92	4.11	<1	-	-	-	**5333**
5352	2	3	1	4.15	**3.63**	4.53	-	-	-	-	-	-	3.34	3.53	2.97	-	-	-	3.3	**<1**	3.06	3.26	<1	3.04	3.15	<1	2.85	<1	<1	3.53	<2	<2	4.49	3.74	3.95	<1	-	-	-	**5352**
5419	1	2	3	3.98	4.3	4.71	-	-	-	4	4.29	4.73	3.36	3.51	3.19	-	-	-	-	-	-	-	-	-	3.1	<1	2.98	<1	<1	3.54	<1	<1	4.58	3.96	4.46	<1	-	-	-	**5419**
5446	1	3	2	4.08	4.33	4.99	-	-	-	-	-	-	3.55	3.89	3.21	3.65	3.87	3.1	3.47	3.88	3.15	-	-	-	3.29	-	3.15	<1	<1	2.97	<1	<1	4.76	-	-	-	-	-	-	**5446**
5545	2	1	3	4.13	4.28	4.65	4.19	4.4	4.84	4.07	4.14	4.96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.48	<1	<1	4.71	3.59	3.36	<1	-	-	-	**5545**
5553	1	3	2	4.09	4.54	4.96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.1	<1	2.92	-	-	-	<1	<1	4.47	3.95	-	<1	-	-	-	**5553**
5615	3	2	1	4.04	4.4	4.89	-	-	-	-	-	-	3.48	3.61	3.11	-	-	-	3.3	3.53	3.15	3.18	<1	3.04	3.11	<1	3.15	<1	<1	3.56	<1	<1	4.59	-	-	-	-	-	-	**5615**
5632	2	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**5632**
5701	1	3	2	4.04	4.65	4.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**5701**
5764	1	2	3	4.15	4.67	4.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.04	<0,47	3.04	-	-	-	<0,47	<0,47	**4.04**	-	-	-	-	-	-	**5764**
5801	2	3	1	3.85	4.36	4.6	-	-	-	-	-	-	3.45	3.6	3.11	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	2.89	-	-	-	-	-	-	-	-	-	**5801**
5808	3	1	2	4	4.43	4.84	-	-	-	-	-	-	-	-	-	-	-	-	3.28	3.95	3.04	-	-	-	3.18	<1	2.7	<1	<1	3.26	-	-	-	-	-	-	-	-	-	**5808**
5883	2	3	1	4	4.3	4.73	-	-	-	-	-	-	3.44	3.53	2.95	-	-	-	-	-	-	-	-	-	3.21	<1	3.39	<1	<1	3.74	<2	<2	4.56	-	-	-	-	-	-	**5883**
5950	1	2	3	4.12	4.42	4.98	4.12	4.46	4.87	**5.52**	4.78	5.26	3.46	3.61	3.12	3.43	**<1**	2.98	3.26	**<1**	2.98	3.36	<1	3.11	3.36	<1	3.11	<1	<1	3.62	<1	<1	**3.6**	4.01	4.46	<1	Pos	Pos	Pos	**5950**
5993	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**5993**
6109	2	1	3	4.04	4.18	4.97	-	-	-	-	-	-	-	-	-	-	-	-	3.23	**<0,6**	2.76	-	-	-	-	-	-	<1	<1	3.68	-	-	-	-	-	-	-	-	-	**6109**
6175	3	1	2	**5.02**	4.59	4.87	-	-	-	-	-	-	3.2	3.6	2.8	-	-	-	>1	**<1**	>1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**6175**
6220	1	2	3	4	4.2	4.54	-	-	-	-	-	-	-	-	-	-	-	-	3.08	3.41	**1.95**	-	-	-	3.18	0	2.78	-	-	-	0	0	4.24	-	-	-	-	-	-	**6220**
6224	3	1	2	4.15	4.58	4.83	-	-	-	-	-	-	3.54	4.14	3.24	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.48	-	-	-	-	-	-	-	-	-	**6224**
6232	3	1	2	4.15	4.38	4.95	-	-	-	-	-	-	3.26	3.65	3.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**6232**
6253	1	3	2	4.11	4.52	4.81	-	-	-	3.49	4.36	4.93	3.43	3.98	3.08	3.48	3.95	3	-	-	-	-	-	-	3.34	<1	2.95	<1	<1	3.69	<2	<1	4.6	3.97	4.2	<1	-	-	-	**6253**
6343	3	2	1	4.18	4.25	4.82	-	-	-	-	-	-	-	-	-	-	-	-	3.57	3.64	3.18	-	-	-	3.28	<1	**<1**	<1	<1	3.33	<2	<2	4.64	-	-	-	-	-	-	**6343**
6352	3	2	1	4	4.2	4.8	-	-	-	-	-	-	3.1	3.6	2.7	-	-	-	3.2	**<2**	2.7	-	-	-	3.2	<1	3	<1	<1	3.4	<2	<2	4.3	3.7	4.8	<1	-	-	-	**6352**
6368	1	3	2	4.04	4.46	4.87	4.04	4.41	4.81	-	-	-	3.3	4.06	3.26	-	-	-	3.28	3.71	3.08	3.54	<1	3.36	3.54	<1	3.36	-	-	-	<2	<2	4.54	3.62	4.02	<1	-	-	-	**6368**
6456	2	1	3	4.06	4.44	4.81	-	-	-	-	-	-	3.4	3.63	3.15	3.35	3.91	3.06	3.3	3.92	3.08	3.24	**3.8**	3.19	3.24	0	3.19	0	0	3.35	0	0	4.77	3.93	4.19	0	-	-	-	**6456**
6490	3	1	2	**4.86**	4.05	4.42	-	-	-	-	-	-	3.27	3.45	**3.9**	-	-	-	-	-	-	-	-	-	-	-	-	**1.54**	0	**0**	**4.8**	0	**0**	**0**	3.99	**4.2**	-	-	-	**6490**
6594	2	1	3	3.99	4.9	4.85	-	-	-	-	-	-	3.39	3.81	2.66	-	-	-	3.8	4.39	2.83	-	-	-	-	-	-	<1	<1	3.07	-	-	-	3.82	4.14	<2	-	-	-	**6594**
6628	2	3	1	4.01	4.33	4.7	-	-	-	-	-	-	-	-	-	2.86	**0**	2.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**6628**
6658	1	2	3	3.92	4.26	4.7	-	-	-	-	-	-	3.34	3.68	2.65	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.34	-	-	-	-	-	-	-	-	-	**6658**
6686	3	2	1	-	-	-	4.03	4.37	4.75	-	-	-	3.69	3.89	3.13	-	-	-	-	-	-	3.11	**3.9**	3.1	3.11	<1	3.11	-	-	-	<1	<1	4.51	4.08	4.18	<1	-	-	-	**6686**
6720	1	3	2	3.95	4.3	4.79	-	-	-	-	-	-	3.34	**<1**	3.04	-	-	-	3.28	**<1**	2.96	-	-	-	2.98	<1	2.93	<1	<1	3.43	<1	<1	4.49	-	-	-	-	-	-	**6720**
6728	1	3	2	4	4.3	4.9	-	-	-	-	-	-	-	-	-	-	-	-	3.4	3.5	3.1	-	-	-	3.4	<1	3	-	-	-	<2	<2	**5.3**	**<2**	3.8	<2	-	-	-	**6728**
6730	1	2	3	4.04	4.38	4.63	-	-	-	-	-	-	-	-	-	-	-	-	3.4	3.63	3	-	-	-	3.26	<1	3	<1	<1	3.26	<2	<2	4.85	-	-	-	-	-	-	**6730**
6762	3	2	1	4.04	4.6	4.94	-	-	-	-	-	-	3.5	4.07	3.28	-	-	-	-	-	-	-	-	-	3.48	<1	3.13	-	-	-	-	-	-	-	-	-	-	-	-	**6762**
6852	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**6852**
6885	3	2	1	4.24	4.41	4.93	-	-	-	-	-	-	3.52	3.91	3.08	-	-	-	-	-	-	-	-	-	-	-	-	0	0	3.59	0	0	4.64	4.05	4.3	0	Pos	Pos	Pos	**6885**
6944	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**6944**
6958	1	3	2	**2.9**	**3.32**	**3.6**	-	-	-	-	-	-	3.26	3.85	2.99	-	-	-	-	-	-	-	-	-	-	-	-	0	0	2.95	-	-	-	-	-	-	-	-	-	**6958**
6971	3	1	2	4.41	4.49	4.87	-	-	-	-	-	-	3.26	3.82	3.03	-	-	-	-	-	-	-	-	-	-	-	-	0	0	3.03	-	-	-	-	-	-	-	-	-	**6971**
7024	1	3	2	4	4.41	4.77	-	-	-	-	-	-	3.28	3.95	2.85	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.51	-	-	-	-	-	-	-	-	-	**7024**
7096	2	3	1	4.03	4.43	4.78	-	-	-	-	-	-	3.31	3.45	3	-	-	-	3.38	3.04	3.1	3.38	<0,5	-	3.38	<0,5	3.1	-	-	-	<2	<2	4.6	3.95	4.27	<1	-	-	-	**7096**
7182	3	1	2	4.04	4.52	4.88	4.06	4.44	4.76	4.03	4.49	4.84	3.28	3.98	3.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**7182**
7191	1	2	3	**4.89**	**5.25**	**5.72**	**4.85**	**5.27**	**5.62**	-	-	-	-	-	-	3.04	**0**	3.04	3.04	**0**	3.04	3.04	0	3.04	3.04	0	3.04	-	-	-	0	0	**0**	-	-	-	-	-	-	**7191**
7207	1	3	2	4	4.36	4.88	-	-	-	-	-	-	3.25	3.65	2.85	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.62	-	-	-	3.92	4.24	<1	-	-	-	**7207**
7232	2	1	3	4.03	4.81	4.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**7232**
m				4.039	4.399	4.802	4.004	4.383	4.751	3.798	4.064	4.615	3.351	3.712	3.017	3.341	3.733	2.993	3.341	3.633	3.035	3.344	0	3.072	3.175	0	3.048	0	0	3.480	0	0	4.613	3.891	4.189	0	pos	pos	pos	**m**
s				0.097	0.156	0.138	0.100	0.116	0.153	0.371	0.425	0.514	0.131	0.218	0.168	0.194	0.152	0.268	0.168	0.287	0.176	0.175	0	0.168	0.165	0	0.176	0	0	0.213	0	0	0.116	0.112	0.286	0	-	-	-	**s**

Lab nr.	Provnr.			Aerobic microorganisms 30 °C			Aerobic microorganisms 20 °C			Contaminating microorganisms			Enterobacteriaceae			Coliform bacteria 30 °C			Coliform bacteria 37 °C			Thermotolerant colif. Bacteria			Escherichia coli			Presumptive Bacillus cereus			Coagulase-positive staphylococci			Enterococci			Gram neg bacteria in dairy prod.			Lab nr.
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	
7242	2	3	1	3.86	4.24	4.82	-	-	-	-	-	-	3.34	3.59	3.07	-	-	-	-	-	-	-	-	-	-	-	-	0	0	3.3	-	-	-	-	-	-	-	-	-	7242
7248	1	3	2	3.96	4.57	4.52	-	-	-	-	-	-	3.19	3.61	**3.95**	-	-	-	3.22	**<1**	2.78	3.34	<1	3.12	3.22	<1	3.14	<1	<1	3.49	<2	<2	4.72	3.97	4.19	<2	-	-	-	7248
7253	1	2	3	4.09	4.35	4.91	-	-	-	-	-	-	3.34	3.67	3.18	-	-	-	3.42	3.63	3.1	-	-	-	3.18	<1	3.1	<1	<1	3.48	<1	<1	4.62	-	-	-	-	-	-	7253
7334	2	3	1	3.95	4.48	4.76	-	-	-	-	-	-	-	-	-	-	-	-	3.15	3.66	2.72	-	-	-	**1**	<1	**1**	<1	**3.71**	3.21	<1	<1	4.59	-	-	-	-	-	-	7334
7449	1	3	2	4.04	4.69	4.89	-	-	-	-	-	-	3.46	3.52	3.04	3.45	3.76	2.98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7449
7533	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7533
7543	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7543
7564	1	2	3	3.97	4.26	4.81	3.92	4.32	4.62	3.97	4.23	4.83	3.11	3.6	2.85	-	-	-	3.38	3.65	3.08	3.18	**3.5**	3.23	2.95	<1	3.23	<1	<1	3.52	<2	<2	4.53	3.88	4.08	<1	-	-	-	7564
7596	1	2	3	3.92	4.46	4.66	3.79	4.35	5.16	-	-	-	3.06	3.48	2.85	3.08	3.43	2.43	3.03	3.51	2.83	2.9	<1	2.92	2.9	<1	2.83	<1	<1	3.2	<1	<1	4.54	3.86	4.32	<1	-	-	-	7596
7617	3	1	2	3.95	4.38	4.74	-	-	-	-	-	-	-	-	-	-	-	-	3.32	4.64	3.01	-	-	-	3.05	<1	3.01	-	-	-	<2	<2	4.54	3.9	4.12	<1	-	-	-	7617
7627	1	2	3	3.93	4.17	4.79	-	-	-	-	-	-	-	-	-	-	-	-	2.95	3.11	3.2	-	-	-	-	-	-	<1	<1	3.55	-	-	-	-	-	-	-	-	-	7627
7631	2	3	1	3.94	4.23	4.78	-	-	-	-	-	-	3.21	3.65	2.99	3.19	3.8	2.89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7631
7655	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7655
7688	3	2	1	3.94	4.35	4.83	3.99	4.41	4.73	-	-	-	**4.28**	**4.59**	3.03	3.3	3.67	2.95	3.34	3.57	3.08	3.41	<1	3.28	3.26	<1	3.28	<1	<1	3.46	<1	<1	4.7	3.89	4.21	<1	-	-	-	7688
7728	3	1	2	4.05	4.72	5.06	4.06	4.66	4.98	-	-	-	-	-	-	-	-	-	3.46	4.08	3.2	3.46	<1	3.2	3.22	<1	3.2	<1	<1	3.39	<1	<1	4.63	-	-	-	-	-	-	7728
7750	2	1	3	4.16	4.68	5.09	-	-	-	-	-	-	3.33	3.95	3.07	-	-	-	3.26	3.65	3.05	-	-	-	-	-	-	<1	<1	**5.04**	-	-	-	-	-	-	-	-	-	7750
7825	1	2	3	4.12	4.49	4.79	-	-	-	-	-	-	**<1**	3.2	3.09	-	-	-	-	-	-	3.52	<1	3.1	3.3	<1	3.3	-	-	-	<2	<2	4.65	4.22	**<1**	<1	-	-	-	7825
7876	3	2	1	4	4.4	4.9	-	-	-	-	-	-	3.4	3.6	2.8	-	-	-	-	-	-	-	-	-	3.4	<1	**<1**	<1	<1	3.7	<2	<2	4.5	3.8	3.9	<1	-	-	-	7876
7882	1	3	2	4.07	4.37	4.68	-	-	-	-	-	-	-	-	-	-	-	-	3.38	2.87	**2.03**	-	-	-	**2.09**	<1	**2.08**	-	-	-	**2.3**	<1	**<1**	-	-	-	-	-	-	7882
7906	2	1	3	3.99	4.44	4.82	-	-	-	-	-	-	3.32	3.6	3.08	-	-	-	3.29	3.59	3.13	-	-	-	3.06	<2	3.13	<2	<2	3.47	<2	<2	4.58	-	-	-	-	-	-	7906
7930	2	3	1	4	4.52	4.87	-	-	-	-	-	-	3.4	3.97	3.14	3.41	4.08	3.28	3.38	4	3.2	3.4	<1	3.18	3.28	<1	3.18	<1	<1	3.63	<2	<2	4.66	3.9	4.25	<1	-	-	-	7930
7940	3	1	2	4	4.35	4.88	-	-	-	-	-	-	-	-	-	3.38	3.53	2.93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7940
7962	3	2	1	4.05	4.34	4.9	-	-	-	-	-	-	3.34	3.84	3.11	3.36	**0**	3.26	3.34	**0**	3.3	3.17	0	2.69	2.95	0	2.69	0	0	3	0	0	4.66	4.14	4.06	0	-	-	-	7962
7984	3	2	1	3.9	4.22	4.78	-	-	-	-	-	-	3.18	3.99	**4.05**	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.4	-	-	-	-	-	-	Pos	Pos	Pos	7984
8068	1	3	2	4	4.41	4.78	4.11	4.4	4.76	-	-	-	3.46	3.56	3.08	3.08	**2.9**	2.51	3.46	3.18	3.08	3.36	0	3.11	3.26	0	3.11	0	0	3.68	0	0	**3.43**	3.95	4.28	0	-	-	-	8068
8105	2	3	1	4.06	4.44	4.84	-	-	-	-	-	-	-	-	-	-	-	-	3.45	**<1**	3.16	-	-	-	3.14	<1	3.15	-	-	-	<1	<1	4.52	-	-	-	-	-	-	8105
8213	2	1	3	4.03	4.34	4.74	-	-	-	-	-	-	3.36	3.88	2.95	-	-	-	-	-	-	-	-	-	3.11	<1	3.06	<1	<1	3.53	-	-	-	-	-	-	Pos	Pos	Pos	8213
8260	1	3	2	3.83	4.31	4.77	-	-	-	-	-	-	3.19	3.31	2.69	3.56	**<1**	3.05	3.49	**<1**	3.03	-	-	-	-	-	-	<1	<1	3.6	<1	<1	4.68	**3.19**	4.3	<1	-	-	-	8260
8313	1	3	2	3.95	4.28	4.62	-	-	-	-	-	-	3.2	3.52	2.75	-	-	-	-	-	-	-	-	-	3.1	<1	3.06	<1	<1	3.42	<2	<2	4.59	3.83	4.04	<1	-	-	-	8313
8333	3	2	1	4.07	4.45	4.93	-	-	-	-	-	-	3.34	3.67	**2.39**	-	-	-	3.44	**<0,60**	2.61	-	-	-	-	-	-	<1	<1	3.62	-	-	-	3.89	4.27	<2	-	-	-	8333
8352	2	1	3	4.17	4.66	5.13	-	-	-	-	-	-	3.42	3.97	3.08	3.27	3.76	2.86	3.2	3.89	2.99	-	-	-	3	<1	3.08	<1	<1	3.8	<1	<1	4.6	3.98	4.51	<1	-	-	-	8352
8397	3	2	1	3.95	4.34	4.75	-	-	-	-	-	-	3.41	3.86	3.1	-	-	-	-	-	-	-	-	-	3.3	<1	**<1**	<2	<2	3.46	<2	<2	4.57	**<1**	4.09	<1	-	-	-	8397
8428	1	3	2	4.02	4.45	4.89	-	-	-	4.02	4.03	3.54	3.33	4.12	3.15	-	-	-	3.46	-	3.16	-	-	-	3.12	<1	3.11	<1	<1	3.7	<2	<2	4.67	3.96	4.15	<1	-	-	-	8428
8430	1	2	3	4	4.42	4.62	-	-	-	-	-	-	-	-	-	2.96	3.81	2.9	-	-	-	-	-	-	3.04	<1	3	<1	<1	3.57	<1	<1	4.78	-	-	-	-	-	-	8430
8435	1	2	3	4	**6.33**	4.6	4.04	**6.38**	4.63	-	-	-	3.37	3.9	2.91	3.36	3.85	3	3.37	3.9	2.86	3.45	<1	3.13	3.22	<1	3.13	<1	<1	3.7	<1	<1	4.56	3.96	4.23	<1	-	-	-	8435
8523	1	3	2	4	4.35	4.95	-	-	-	-	-	-	3.27	3.81	3	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.6	<2	<2	4.78	-	-	-	-	-	-	8523
8529	1	3	2	4.14	4.66	5.03	-	-	-	-	-	-	3.49	3.69	3.2	-	-	-	-	-	-	3.49	<1	3.05	3.35	<1	3.05	<1	<1	3.66	<2	<2	4.55	3.85	**2.56**	<1	-	-	-	8529
8568	1	2	3	4.21	4.58	5.03	-	-	-	-	-	-	3.32	3.6	2.98	-	-	-	3.21	3.6	3.04	-	-	-	-	-	-	<1	<1	3.55	-	-	-	3.86	4.11	<2	-	-	-	8568
8626	3	1	2	3.78	4.28	4.62	-	-	-	-	-	-	3.3	3.38	2.85	-	-	-	3.04	3.04	3.04	3.04	**3**	3.04	3.04	<0,3	3.04	-	-	-	-	-	-	-	-	-	-	-	-	8626
8628	3	2	1	4.06	4.29	4.95	4.03	4.27	4.67	-	-	-	3.32	3.63	2.74	3.28	3.96	3.17	3.35	3.99	3.11	3.42	<1	3.12	3.42	<1	3.12	<1	<1	3.57	<2	<2	4.31	3.8	4.02	<1	-	-	-	8628
8657	3	2	1	4.06	4.42	4.84	-	-	-	-	-	-	3.59	3.68	2.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8657
8696	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8696
8734	1	3	2	4.11	4.65	4.63	-	-	-	-	-	-	3.39	3.82	3.24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8734
8742	1	3	2	4.08	4.41	4.93	4	4.48	4.86	-	-	-	3.53	3.78	3.18	3.66	3.66	3.32	3.66	4.04	3.18	3.66	<1	3.18	3.38	<1	3.18	<1	<1	3.62	<1	<1	4.72	-	-	-	-	-	-	8742
8756	3	1	2	**5.3**	**5.4**	**5.8**	-	-	-	-	-	-	**4.4**	**5.2**	**4**	-	-	-	-	-	-	-	-	-	**4.3**	<1	**3.9**	<1	<1	3.5	<1	<1	**<1**	-	-	-	-	-	-	8756
m				4.039	4.399	4.802	4.004	4.383	4.751	3.798	4.064	4.615	3.351	3.712	3.017	3.341	3.733	2.993	3.341	3.633	3.035	3.344	0	3.072	3.175	0	3.048	0	0	3.480	0	0	4.613	3.891	4.189	0	pos	pos	pos	**m**
s				0.097	0.156	0.138	0.100	0.116	0.153	0.371	0.425	0.514	0.131	0.218	0.168	0.194	0.152	0.268	0.168	0.287	0.176	0.175	0	0.168	0.165	0	0.176	0	0	0.213	0	0	0.116	0.112	0.286	0	-	-	-	**s**

Lab nr.	Provnr.			Aerobic microorganisms 30 °C			Aerobic microorganisms 20 °C			Contaminating microorganisms			Enterobacteriaceae			Coliform bacteria 30 °C			Coliform bacteria 37 °C			Thermotolerant colif. Bacteria			Escherichia coli			Presumptive Bacillus cereus			Coagulase-positive staphylococci			Enterococci			Gram neg bacteria in dairy prod.			Lab nr.
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	
8766	3	1	2	4	4.5	4.9	-	-	-	-	-	-	3.4	3.6	3	-	-	-	-	-	-	-	-	-	3.5	<1	2.9	<1	<1	3.6	<1	<1	4.5	3.9	4.4	<1	-	-	-	8766
8891	2	3	1	**3.07**	-	4.88	-	-	-	**2.15**	3.72	4.86	3.42	4.06	3.14	3.45	3.85	2.94	-	-	-	-	-	-	-	<1	3.11	<1	<1	3.56	-	<1	4.56	-	-	-	-	-	-	8891
8909	1	2	3	4.11	4.38	4.82	-	-	-	-	-	-	3.5	3.41	2.85	3.45	3.63	3.02	-	-	-	-	-	-	3.36	<1	2.89	<1	<1	3.53	<2	<2	4.72	4.01	4.14	<1	-	-	-	8909
8918	3	1	2	3.95	4.25	4.67	-	-	-	2.73	4.13	4.55	-	-	-	-	-	-	3.21	3.54	3.05	-	-	-	3.05	<1	2.95	<1	<1	3.55	<2	<2	4.45	-	-	-	-	-	-	8918
9007	1	3	2	3.95	4.3	4.83	-	-	-	-	-	-	-	-	-	3.2	**3.1**	3.2	-	-	-	-	-	-	3	0	3.2	-	-	-	-	-	-	-	-	-	-	-	-	9007
9034	1	3	2	4	4.2	4.9	4.1	4.3	4.8	-	-	-	3.5	3.7	2.9	-	-	-	-	-	-	-	-	-	3	<1	3	-	-	-	-	-	-	-	-	-	-	-	-	9034
9078	1	3	2	4.22	**3.56**	4.89	-	-	-	-	-	-	-	-	-	3.6	3.61	3.52	3.49	3.74	2.47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9078
9217	1	2	3	4.35	4.39	4.47	-	-	-	-	-	-	3.36	3.67	2.94	-	-	-	-	-	-	-	-	-	-	-	-	<1	**3.53**	3.31	-	-	-	3.69	4.17	<1	-	-	-	9217
9429	3	1	2	4.11	4.48	4.95	-	-	-	4.11	4.46	4.98	3.52	3.58	3	3.34	**<1**	2.85	3.45	**<1**	2.96	3.43	<1	2.94	3.34	<1	2.94	<1	<1	3.3	<1	<1	4.66	3.9	4.32	<1	-	-	-	9429
9436	3	2	1	3.92	4.26	4.71	-	-	-	-	-	-	3.16	3.62	2.8	3.3	3.54	2.67	3.11	**<1**	2.77	3.26	<1	3.04	3.01	<1	3	<1	<1	3.61	<1	<1	4.58	3.93	3.97	<1	-	-	-	9436
9451	3	2	1	4.15	4.38	4.81	4.08	4.43	4.59	-	-	-	3.54	3.92	3.11	3.3	3.63	3.18	3.41	3.64	3.11	3.38	<1	3.04	3.15	<1	3.04	<1	<1	3.43	<1	<1	4.6	3.91	3.9	<1	-	-	-	9451
9453	3	1	2	4	4.29	4.71	-	-	-	3.86	3.48	4.48	3.3	3.56	3.02	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.63	<1	<1	4.71	3.96	3.97	<1	-	-	-	9453
9512	1	3	2	3.91	4.28	4.66	-	-	-	-	-	-	3.18	3.71	3.25	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.33	-	-	-	-	-	-	-	-	-	9512
9559	3	2	1	3.97	4.38	4.74	-	-	-	3.88	3.66	4.83	3.19	3.85	**2.04**	-	-	-	3.19	3.94	**1.78**	-	-	-	3.1	<1	2.92	<1	<1	3.43	<1	<1	4.6	-	-	-	Pos	Pos	Pos	9559
9569	2	1	3	4.21	4.3	**3.97**	-	-	-	4.05	4.25	3.94	3.36	3.96	**2.26**	3.41	**<1**	2.23	3.43	**<1**	**2.34**	3.86	<1	2.61	**<1**	<1	2.61	<1	<1	3.02	<2	<2	**4.03**	3.97	3.95	<1	-	-	-	9569
9662	1	3	2	4	4.3	4.86	-	-	-	-	-	-	3.28	3.64	3.1	2.96	3.48	3.11	2.99	3.56	3.28	-	-	-	3.15	<1	3.11	<1	<1	3.26	<2	<2	4.6	3.79	3.6	<1	-	-	-	9662
9747	3	2	1	4	4.2	4.57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.48	-	-	-	-	-	-	-	-	-	9747
9783	1	3	2	4.08	4.51	4.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9783
9890	3	1	2	4.01	4.45	4.84	4.04	4.37	4.77	-	-	-	3.72	3.83	3.11	-	-	-	3.54	3.54	3.25	-	-	-	3.25	0	3.25	0	0	3.72	0	0	4.58	-	-	-	-	-	-	9890
9903	3	2	1	4.06	4.35	4.86	-	-	-	-	-	-	3.32	3.93	3.01	-	-	-	-	-	-	-	-	-	3.12	<2	3.18	<1	<1	3.35	<2	<2	4.55	3.88	4.13	<1	-	-	-	9903
9923	1	3	2	4.17	4.32	4.86	-	-	-	-	-	-	3.43	3.64	3.14	-	-	-	3.52	3.15	3.26	3.32	**3.9**	2.95	3.13	<1	3.1	-	-	-	**2**	<1	4.66	-	-	-	-	-	-	9923
9950	2	3	1	4.1	4.61	4.64	-	-	-	4.09	4.41	4.73	-	-	-	-	-	-	-	-	-	3.52	**3.9**	3.02	-	-	-	<1	<1	3.62	-	-	-	-	-	-	-	-	-	9950
n				174	174	174	27	28	28	19	19	19	133	134	133	49	50	49	97	99	98	53	53	52	116	115	116	123	123	124	108	110	110	76	75	75	9	9	9	**n**
Min				2.90	3.32	3.30	3.77	4.18	4.36	2.15	3.08	3.42	0	0	2.04	2.86	0	0	0	0	0	2.90	0	2.61	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	**Min**
Max				5.30	6.33	5.94	4.85	6.38	5.62	5.52	4.78	5.26	4.40	5.20	4.18	4.18	4.74	3.70	4.26	4.80	3.90	4.15	3.89	4.04	4.30	0	4.28	3.95	3.71	5.04	4.75	0	5.67	4.87	5.02	4.18	-	-	-	**Max**
median				4.03	4.38	4.82	4.03	4.39	4.75	3.96	4.14	4.83	3.34	3.67	3.04	3.36	3.76	3.00	3.37	3.63	3.08	3.38	0	3.10	3.16	0	3.080	0	0	3.51	0	0	4.61	3.90	4.15	0	-	-	-	**median**
m				4.039	4.399	4.802	4.004	4.383	4.751	3.798	4.064	4.615	3.351	3.712	3.017	3.341	3.733	2.993	3.341	3.633	3.035	3.344	0	3.072	3.175	0	3.048	0	0	3.480	0	0	4.613	3.891	4.189	0	pos	pos	pos	**m**
s				0.097	0.156	0.138	0.100	0.116	0.153	0.371	0.425	0.514	0.131	0.218	0.168	0.194	0.152	0.268	0.168	0.287	0.176	0.175	0	0.168	0.165	0	0.176	0	0	0.213	0	0	0.116	0.112	0.286	0	-	-	-	**s**
F+				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	2	5	0	3	0	0	0	0	2	0	0	0	**F+**
F-				0	0	0	0	0	0	0	0	0	1	2	0	0	10	1	1	26	4	0	0	0	1	0	6	0	0	1	0	0	4	4	1	0	0	0	0	**F-**
<				3	3	5	0	0	0	1	0	0	2	1	5	0	2	0	1	0	5	0	0	0	2	0	2	0	0	1	0	0	9	3	3	0	-	-	-	**<**
>				7	4	4	1	2	1	1	0	0	4	4	6	1	1	0	2	1	2	2	0	2	3	0	4	0	0	3	0	0	4	1	0	0	-	-	-	**>**
< OK				3.70	3.89	4.30	3.77	4.18	4.36	2.73	3.08	3.42	3.02	2.90	2.52	2.86	3.43	2.23	2.95	2.87	2.47	2.90	0	2.61	2.68	0	2.49	0	0	2.89	0	0	4.24	3.59	3.36	0	-	-	-	**< OK**
> OK				4.41	5.05	5.13	4.19	4.67	5.16	4.11	4.78	5.26	3.72	4.14	3.45	3.74	4.08	3.70	3.80	4.64	3.34	3.86	0	3.36	3.54	0	3.39	0	0	4.04	0	0	4.85	4.22	5.02	0	-	-	-	**> OK**

n = number of analyses performed
Min = lowest reported result
Max= highest reported result
Median = median value

m = mean value
s = standard deviation
F+ = false positive
F- = false negative

< = low outlier
> = high outlier
< OK = lowest accepted value
> OK = highest accepted value

Annex 2. ***z-scores of all participants - October 2014***

z-scores were calculated according the formula : z = (x-m)/s.

x = result of the individual laboratory, m = mean of the results of all participating laboratories , s = standard deviation of the results of all participating laboratories .

Correct negative results in quantitative analyses and correct results in qualitative analyses obtained a z-score of zero.

False results did not generate a z-score.

2 < |z| ≤ 3, |z|>3

Lab no.	sample	Aerobic microorganisms 30 °C			Aerobic microorganisms 20 °C			Contaminating microorganisms			Enterobacteriaceae			Coliform bacteria 30°C			Coliform bacteria 37°C			Thermotolerant coliform bacteria			Escherichia coli			Presumptive Bacillus cereus			Coagulase-positive staphylococci			Enterococci			Gram-neg bacteria i dairy prod.			Lab no.
	A B C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	
1081	3 1 2	0.013	1.293	0.707							-0.920	-0.330	**-2.958**																								1081
1149	1 3 2	**-3.475**	-0.376	-0.163							-0.081	-0.193	0.552				0.353		0.425				-0.822	0	-0.274	0	0	0.000	0	0	-0.111							1149
1290	1 2 3	0.526	**2.128**	1.360							1.826	0.678	1.682	1.285		1.481							-0.154	0	1.777	0	0	0.188	0	0	0.407							1290
1594	1 2 3	0.423	0.587	**-4.000**							0.835	1.502	0.552	0.770			0.412			0.665	0	0.760	-1.064	0	0.866	0	0	1.222	0	0	0.235	0.080	0.667	0				1594
1970	3 1 2	-0.193	0.459	0.055	0.058	0.751	-1.054				1.674	-0.651	0.552	0.461		0.585	1.665		0.425	0.665	0	0.522	1.121	0	0.638	0	0	1.551	0	0	1.702	-1.528	1.333	0				1970
2035	2 3 1	-0.398	0.009	0.707							-0.386		-1.293				0.353		-1.338				1.971	0	0.866	0	0	1.034										2035
2058	1 2 3	**-4.000**	-1.275	-1.468													0.353		-0.201				0.150	0	-0.445	0	0	-1.786										2058
2072	1 3 2	**2.167**	**-3.266**	-1.033	**-2.347**	-1.061	-0.923				-1.835	-1.384	-1.114	-1.549		-1.021	-1.794		-1.338				-1.550	0	-1.071	0	0	-0.376	0	0	-0.974							2072
2086	1 2 3	-0.428	-1.969	0.026				0.436	-0.599	**-2.327**	-1.248	-1.819	0.105										-0.828	0					0	0	0.027	-0.393	-0.943	0				2086
2109	1 2 3	0.423	0.266	-0.526																																		2109
2324	3 1 2	-0.500	-0.505	**-2.628**							-0.462	-1.751	**-2.304**										**-3.007**	0	**-2.040**	0	0	-0.940	0	0	**-3.910**	**-4.000**	-1.853	0				2324
2386	1 2 3	0.628	-0.184	0.635													1.366		0.368	-0.651	0	0.107				0		0.470	0	0	0.753							2386
2402	2 1 3	-1.321	0.587	-0.236							0.530	0.219	0.552				0.651		0.368				-1.489	0	0.296													2402
2458	2 1 3	-0.705	1.871	0.490		**2.478**	0.649				-0.309	-0.285	0.373	-0.570		-0.311	-0.244		-0.542	-0.422	0	-0.962	-0.336	0	-1.926	0	0	0.000	0	0	0.235	-1.707	1.403	0				2458
2459	3 2 1	0.115	0.208	0.439	-0.543	0.553	0.812										0.126		1.250				1.242	0	**4.000**	0		0.813	0	0	**2.005**							2459
2637	2 1 3	0.628	0.009	0.707							1.140	-0.514	-0.103				1.545		0.937	0.894	0	1.353	1.971	0	-0.843	0	0	0.094	0	0	-0.111							2637
2659	3 2 1	**2.474**	-0.697	-1.033										0.564		-1.095	-0.840		1.619				0.635	0	0.581				0	0	**-2.356**							2659
2670	3 1 2	-0.295	0.394	**-4.000**													-1.794		0.027	-1.739	0	-0.190	-0.822	0	-0.046				0	0	**-4.000**							2670
2704	2 3 1	1.449	0.202	0.707							1.445	0.723	-0.162				1.486		0.311				-0.579	0	-0.046	0	0	0.141	0	0	0.321							2704
2720	2 1 3	0.013	-0.440	0.345							0.530	0.723	0.671													0	0	0.940										2720
2745	2 3 1	0.218	0.073	1.722							0.987	0.998	1.444							0.665	0	0.047	0.757	0	0.182	0	0	1.739	0	0	0.753							2745
2757	1 3 2	0.423	0.523	-0.308	-1.746	-1.320	**-2.560**				-0.081	1.319	0.552	0.306		0.324										0	0	-1.034										2757
2764	1 2 3	-0.398	-1.275	0.780							0.377	-0.010	-0.222				-0.125		-0.257							0	0	-1.034				0.974	-0.138	0				2764
2842	3 2 1							0.032	**-2.315**	-1.198										-0.651		0.641				0	0	-1.739					-1.528	-1.678	0				2842
2941	1 3 2	**3.295**	0.523	-0.453							-0.920	-0.743	-1.590	-0.776		-1.245							0.150		0.866		**2.444**			-0.629	-0.545	-0.208					2941
3055	2 3 1	-0.911	0.715	0.127							-0.996	1.090	-0.519														0	1.551							0	0	0	3055
3159	2 3 1	-0.705	-0.184	-0.163							1.445	0.952	0.373				-0.363		0.368	-0.136		0.463	-0.579	0	0.182	0	0	1.081	0	0	1.443							3159
3225	2 3 1	-0.603	-1.404	-0.453							-0.920	-0.376	0.189													0	0	0.000							0	0	0	3225
3243	3 2 1	0.423	0.266	0.780							0.072	0.678	-0.043																									3243
3305	3 1 2	0.423	-0.376	0.127							-0.233	-0.651	**2.336**							0.494	0	1.234	1.546	0	1.321	0	0	-1.410	0	0	0.235							3305
3452	2 1 3	-0.705	-1.147	-1.613										**2.058**		1.183																						3452
3457	2 3 1				-0.243	-1.320	-0.072				-1.072	-0.880	-1.769							0.208	0	0.522							0	0	1.098	0.438	-0.173	0				3457
3533	3 1 2	-0.090	-0.954	0.562													-1.794		**-2.134**	-1.739	0	**-2.446**	-0.822	0	**-2.211**				0	0	**-4.000**							3533
3543	3 2 1	0.218	-0.376	-0.961							**-2.064**	1.823	-0.698										-1.307	0		0	0	-1.833	0	0	**-4.000**	0.349	0.387	0				3543
3587	1 2 3	-0.090	0.844	-1.323							0.987	**-3.721**	0.135	-0.467		-0.610	1.307		-0.030				0.028	0	1.435	0	0	0.094				0.080	1.017	0				3587
3626	1 3 2	-0.398	0.138	0.562							-0.004	-0.514	-0.995	-0.003		-0.423	-0.005		-0.712	0.437	0	0.760	1.485	0	0.866	0	0	0.705	0	0	**2.048**	1.242	1.333	0				3626
3652	1 2 3	-0.398	-0.890	-0.091													0.293		0.766																			3652
3831	3 1 2	-0.705	-0.761	-0.526	-0.844	-0.630	-0.923																0.818	0	-0.331													3831
3864	3 2 1	-0.911	-0.505	0.707							-1.301	0.311	0.076																						0	0	0	3864
3868	2 3 1	-0.193	-0.505	0.055				-1.073	-1.303	0.593	0.835	0.907	-0.103	0.564		-0.012	0.651		-0.201	-0.365	0	0.285	-0.943	0	0.410	0	0	1.034	0	0	1.357	-0.098	**-4.000**	0				3868
3925	2 1 3	-0.090	0.780	0.345													**-4.000**		**-4.000**																			3925
4047	3 1 2	0.423	-0.248	-0.018							-1.072	1.319	0.433										-0.154	0	0.410	0	0	0.564	0	0	0.494							4047
4050	1 3 2	-1.116	-0.505	0.562				-1.423	-0.150	0.710	-0.538	0.998	0.076	-0.930		-0.199										0	0	-0.376							0	0	0	4050
4064	2 1 3	-0.295	0.651	0.272							0.453	0.998	-0.043																									4064
4100	2 1 3	**4.000**	-0.248	-1.758							-0.920	-1.384	-0.400				-0.661		-0.655				-1.307	0	-0.786	0	0	-0.235	0	0	-0.025	0.080	1.403	0				4100

Lab no.	sample	Aerobic microorganisms 30 °C			Aerobic microorganisms 20 °C			Contaminating microorganisms			Enterobacteriaceae			Coliform bacteria 30°C			Coliform bacteria 37°C			Thermotolerant coliform bacteria			Escherichia coli			Presumptive Bacillus cereus			Coagulase-positive staphylococci			Enterococci			Gram-neg bacteria i dairy prod.			Lab no.
	A B C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	
4153	1 3 2	0.013	0.587	1.142							-0.081	0.998	0.968	-0.106		0.697	1.187		1.733	1.066	0	1.353	0.818	0	1.435	0	0	0.705				0.080	-0.523	0				4153
4171	3 1 2	1.654	-0.119	0.780							-1.148	-0.422	0.552				-0.244		-0.428							0	0	0.752				0.080	-0.663	0				4171
4246	2 1 3	-0.705	-0.697	-0.381	-0.844	-0.716	-0.595				-0.843	-0.239	-0.222				-0.661						-1.854	0	0.068				0	0	0.062							4246
4266	2 1 3	0.218	-0.248	-0.598													-0.482		0.482				-1.064	0	0.410				0	0	0.839							4266
4278	3 2 1	-1.116	-1.660	-1.396							-0.996	-0.926	-0.043													0	0	-0.658										4278
4288	2 3 1	-0.808	-0.376	-0.308				0.086	0.745	0.574	-0.386	0.219	**-2.185**				0.412		-0.655	-1.109	0	-1.852	-0.215	0	-1.071	0	0	-0.141	0	0	-0.025	**-2.154**	-1.083	0				4288
4339	1 2 3	0.013	-0.184	0.852							0.835	1.319	1.682	0.358		0.510	0.710		1.392	0.494	0	1.353	0.150	0	1.435	0	0	0.846	0	0	0.666	-0.098	0.107	0				4339
4352	2 1 3																																					4352
4400	2 3 1	0.833	-0.248	-0.236							0.377	1.227	1.384													0	0	**-4.000**										4400
4557	1 2 3	-1.423	0.009	**-2.411**													1.665		0.255				1.425	0	0.182				0	0	**-4.000**	**-4.000**	**-4.000**	0				4557
4562	1 2 3	-0.808	-0.633	**-2.121**							0.377	-0.651	-0.162				0.353		-0.883				0.028	0	-0.274	0	0	0.846	0	0	0.580	-0.903	-0.278	0				4562
4633	3 1 2	0.628	0.972	0.055							1.903	1.044	-0.519	0.873		-1.655	1.009		-0.599	0.780	0	0.166	-0.215	0	0.296	0	0	**2.632**	0	0	0.148	0.527	1.928					4633
4635	3 1 2	-0.705	-0.826	0.635							-0.538	-0.651	0.195													0	0	-0.376	0	0	-0.111	0.170	-0.593	0				4635
4664	1 3 2																0.233		0.311	0.265		0.047										-0.009	-0.138	0				4664
4683	2 3 1	**4.000**	**4.000**	**4.000**							**4.000**	**4.000**	**4.000**	**4.000**		**2.639**	**4.000**		**4.000**	**4.000**	0	**4.000**	**4.000**	0	**3.828**	0	0	**4.000**	0	0	**4.000**							4683
4840	1 3 2	0.013	-0.248	**-4.000**							**-4.000**	**-2.529**	-1.888										-1.064	0	**-2.951**	0	0	-0.940	0	0	-0.629	-0.277	-0.313	0				4840
4889	3 2 1	0.013	-0.248	0.345	-0.042	-1.752	-0.137				-0.386	-0.880	0.135				0.531		-0.201	0.379	0	0.225	1.425	0	0.353	0	0	-0.329	0	0	-0.456	0.080	-0.383	0				4889
4951	1 3 2	-0.911	**-2.688**	**-3.643**							**-2.521**	-1.567	**-3.732**				**-2.152**						-1.611	0	-0.502													4951
4955	1 3 2	0.320	0.780	0.780							0.987	1.136	1.801				1.068		0.653	0.379	0	-0.962	0.757	0	1.549	0	0	1.081	0	0	0.753							4955
4980	2 1 3	0.320	0.073	0.780							-0.843	1.044	0.671				0.710		0.425				-0.518	0	0.353	0	0	0.282	0	0	-0.370							4980
4998	1 3 2	0.013	-0.055	-0.961							**-4.000**	**-4.000**	**-4.000**													0	0	-0.799										4998
5018	3 2 1	-0.295	-0.312	1.795							-0.691	0.219	0.135	0.925		0.025	-0.661		1.506	0.208	0	-0.428	0.635	0	-0.274	0	0	0.282	0	0	**4.000**		1.473	0				5018
5100	1 2 3	-0.193	-0.505	0.852															0.596				0.393															5100
5119	1 2 3	0.423	1.101	-0.671										0.925		0.174							0.878	0	0.182													5119
5162	1 3 2																																					5162
5197	2 3 1	1.962	0.780	-0.598							1.292	-0.147	-0.400										1.000	0					0	0	-1.751	0.080	**2.453**	0				5197
5201	1 2 3	0.526	0.138	0.417							-0.462	0.128	0.195				-0.781		0.084				-1.489	0	-0.672	0		-0.705	0	0	0.666							5201
5204	2 1 3	**4.000**	**4.000**	**4.000**							**4.000**	**4.000**	**4.000**				**4.000**		**4.000**	**4.000**	0	**4.000**	**4.000**	0	**4.000**	0	0	**4.000**	0	0	**4.000**	**4.000**	**2.908**	0				5204
5220	2 3 1	-0.193	-0.184	0.200	0.559	-0.112	-0.137				0.225	-0.972	0.016										-1.064	0	**-3.179**													5220
5250	2 1 3																-1.162		**-3.175**				-0.585	0	-1.709	0	0	0.240										5250
5290	2 1 3		1.935									-0.514												0					0									5290
5304	2 1 3	0.526	-0.248	0.635													0.353		0.823				0.332	0	0.752				0	0	**-2.010**							5304
5329	2 1 3	-0.090	0.330	0.925	0.659	0.320	1.107				0.835	-0.193	0.373							-1.052	0	**-2.327**				0	0	0.282	0	0	1.184	0.795	0.177	0				5329
5333	3 2 1	0.320	-0.633	0.127							0.072	-0.376	**2.574**	-0.982		0.548	-0.482		0.425				0.514	0	0.581	0	0	-1.175	0	0	-0.111	0.259	-0.278	0				5333
5352	2 3 1	1.162	**-4.000**	-1.968							-0.065	-0.830	-0.293				-0.238		0.164	-0.508	0	-0.184	-0.178	0	-1.157	0	0	0.240	0	0	-1.052	-1.349	-0.824	0				5352
5419	1 2 3	-0.603	-0.633	-0.671				0.544	0.533	0.223	0.072	-0.926	1.027										-0.457	0	-0.388	0	0	0.282	0	0	-0.284	0.617	0.947	0				5419
5446	1 3 2	0.423	-0.440	1.360							1.521	0.815	1.146	1.595		0.398	0.770		0.653				0.696		0.581	0	0	**-2.397**	0	0	1.271							5446
5545	2 1 3	0.936	-0.761	-1.106	1.861	0.147	0.583	0.732	0.180	0.671																0	0	0.000	0	0	0.839	**-2.690**	**-2.903**	0				5545
5553	1 3 2	0.526	0.908	1.142																			-0.457	0	-0.729				0	0	-1.233	0.527		0				5553
5615	3 2 1	0.013	0.009	0.635							0.987	-0.468	0.552				-0.244		0.653	-0.937	0	-0.190	-0.397	0	0.581	0	0	0.376	0	0	-0.197							5615
5632	2 3 1																																					5632
5701	1 3 2	0.013	1.614	0.417																																		5701
5764	1 2 3	1.100	1.756	1.026																			-0.816	0	-0.040				0	0	**-4.000**							5764
5801	2 3 1	-1.936	-0.248	-1.468							0.759	-0.514	0.552													0	0	**-2.773**										5801
5808	3 1 2	-0.398	0.202	0.272													-0.363		0.027				0.028	0	-1.983	0	0	-1.034										5808
5883	2 3 1	-0.398	-0.633	-0.526							0.682	-0.834	-0.400										0.210	0	1.948	0	0	1.222	0	0	-0.456							5883
5950	1 2 3	0.833	0.138	1.287	1.160	0.665	0.780	**4.000**	1.686	1.255	0.835	-0.468	0.611	0.461		-0.050	-0.482		-0.314	0.093	0	0.225	1.121	0	0.353	0	0	0.658	0	0	**-4.000**	1.063	0.947	0	0	0	0	5950
5993	2 1 3																																					5993
6109	2 1 3	0.013	-1.404	1.215													-0.661		-1.565							0	0	0.940										6109
6175	3 1 2	**4.000**	1.229	0.490							-1.148	-0.514	-1.293																									6175
6220	1 2 3	-0.398	-1.249	-1.874													-1.562		**-4.000**				0.004	0	-1.538				0	0	**-3.262**							6220
6224	3 1 2	1.141	1.165	0.200							1.445	1.960	1.325													0	0	0.000										6224
6232	3 1 2	1.100	-0.119	1.062							-0.729	-0.271	0.212																									6232

Lab no.	sample	Aerobic microorganisms 30 °C			Aerobic microorganisms 20 °C			Contaminating microorganisms			Enterobacteriaceae			Coliform bacteria 30°C			Coliform bacteria 37°C			Thermotolerant coliform bacteria			Escherichia coli			Presumptive Bacillus cereus			Coagulase-positive staphylococci			Enterococci			Gram-neg bacteria i dairy prod.			Lab no.
	A B C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	
6253	1 3 2	0.731	0.780	0.055				-0.830	0.698	0.613	0.606	1.227	0.373	0.719		0.025							1.000	0	-0.559	0	0	0.987	0	0	-0.111	0.706	0.037	0				6253
6343	3 2 1	1.449	-0.954	0.127													1.366		0.823				0.635	0		0	0	-0.705	0	0	0.235							6343
6352	3 2 1	-0.398	-1.275	-0.018							-1.911	-0.514	-1.888				-0.840		-1.907				0.150	0	-0.274	0	0	-0.376	0	0	**-2.701**	-1.707	**2.138**	0				6352
6368	1 3 2	0.013	0.394	0.490	0.358	0.233	0.387				-0.386	1.594	1.444				-0.363		0.255	1.123	0	1.709	**2.214**	0	1.777				0	0	-0.629	**-2.422**	-0.593	0				6368
6456	2 1 3	0.218	0.266	0.055							0.377	-0.376	0.789	0.049		0.249	-0.244		0.255	-0.594		0.700	0.393	0	0.809	0	0	-0.611	0	0	1.357	0.349	0.002	0				6456
6490	3 1 2	**4.000**	**-2.238**	**-2.773**							-0.614	-1.201	**4.000**														0			0			-0.698					6490
6594	2 1 3	-0.500	**3.220**	0.345							0.301	0.448	**-2.126**				**2.738**		-1.167							0	0	-1.927				-0.634	-0.173	0				6594
6628	2 3 1	-0.295	-0.440	-0.743										**-2.476**		-0.162																					6628
6658	1 2 3	-1.218	-0.890	-0.743							-0.081	-0.147	**-2.185**													0	0	-0.658										6658
6686	3 2 1				0.258	-0.112	-0.006				**2.589**	0.815	0.671							-1.338		0.166	-0.397	0	0.353				0	0	-0.888	1.689	-0.033	0				6686
6720	1 3 2	-0.911	-0.633	-0.091							-0.081		0.135				-0.363		-0.428				-1.186	0	-0.672	0	0	-0.235	0	0	-1.061							6720
6728	1 3 2	-0.398	-0.633	0.707													0.353		0.368				1.364	0	-0.274				0	0	**4.000**		-1.363	0				6728
6730	1 2 3	0.013	-0.119	-1.251													0.353		-0.201				0.514	0	-0.274	0	0	-1.034	0	0	**2.048**							6730
6762	3 2 1	0.013	1.293	0.997							1.140	1.640	1.563										1.850	0	0.467													6762
6852	3 2 1																																					6852
6885	3 2 1	**2.064**	0.073	0.925							1.292	0.907	0.373													0	0	0.517	0	0	0.235	1.421	0.387	0	0	0	0	6885
6944	1 2 3																																					6944
6958	1 3 2	**-4.000**	**-4.000**	**-4.000**							-0.691	0.632	-0.162													0	0	**-2.491**										6958
6971	3 1 2	**3.808**	0.587	0.490							-0.691	0.494	0.076													0	0	**-2.115**										6971
7024	1 3 2	-0.398	0.073	-0.236							-0.538	1.090	-0.995													0	0	0.141										7024
7096	2 3 1	-0.090	0.202	-0.163							-0.309	-1.201	-0.103				0.233		0.368	0.208	0		1.242	0	0.296				0	0	-0.111	0.527	0.282	0				7096
7182	3 1 2	0.013	0.780	0.562	0.559	0.492	0.059	0.624	1.004	0.438	-0.538	1.227	0.135																									7182
7191	1 2 3	**4.000**	**4.000**	**4.000**	**4.000**	**4.000**	**4.000**							-1.549		0.174	-1.794		0.027	-1.739	0	-0.190	-0.822	0	-0.046				0	0								7191
7207	1 3 2	-0.398	-0.248	0.562							-0.767	-0.285	-0.995													0	0	0.658				0.259	0.177	0				7207
7232	2 1 3	-0.090	**2.642**	0.997																																		7232
7242	2 3 1	-1.844	-1.025	0.098							-0.103	-0.569	0.290													0	0	-0.841										7242
7248	1 3 2	-0.808	1.101	**-2.048**							-1.225	-0.468	**4.000**				-0.721		-1.452	-0.021	0	0.285	0.271	0	0.524	0	0	0.047	0	0	0.925	0.706	0.002	0				7248
7253	1 2 3	0.526	-0.312	0.780							-0.081	-0.193	0.968				0.472		0.368				0.028	0	0.296	0	0	0.000	0	0	0.062							7253
7334	2 3 1	-0.911	0.523	-0.308													-1.138		-1.793				**-4.000**	0	**-4.000**	0		-1.269	0	0	-0.197							7334
7449	1 3 2	0.013	1.871	0.635							0.835	-0.880	0.135	0.564		-0.050																						7449
7533	3 2 1																																					7533
7543	3 2 1																																					7543
7564	1 2 3	-0.705	-0.890	0.055	-0.844	-0.544	-0.857	0.463	0.392	0.418	-1.835	-0.514	-0.995				0.233		0.255	-0.937		0.938	-1.368	0	1.037	0	0	0.188	0	0	-0.715	-0.098	-0.383	0				7564
7596	1 2 3	-1.218	0.394	-1.033	**-2.147**	-0.285	**2.679**				**-2.216**	-1.063	-0.995	-1.343		**-2.103**	-1.854		-1.167	**-2.540**	0	-0.902	-1.672	0	-1.242	0	0	-1.316	0	0	-0.629	-0.277	0.457	0				7596
7617	3 1 2	-0.900	-0.145	-0.439													-0.101		-0.155				-0.743	0	-0.228				0	0	-0.655	0.036	-0.253	0				7617
7627	1 2 3	-1.116	-1.468	-0.091													**-2.331**		0.937							0	0	0.329										7627
7631	2 3 1	-1.013	-1.082	-0.163							-1.072	-0.285	-0.162	-0.776		-0.386																						7631
7655	1 2 3																																					7655
7688	3 2 1	-1.013	-0.312	0.200	-0.143	0.233	-0.137				**4.000**	**4.000**	0.076	-0.209		-0.162	-0.005		0.255	0.379	0	1.234	0.514	0	1.321	0	0	-0.094	0	0	0.753	-0.009	0.072	0				7688
7728	3 1 2	0.115	**2.064**	1.867	0.559	**2.391**	1.500										0.710		0.937	0.665	0	0.760	0.271	0	0.866	0	0	-0.423	0	0	0.148							7728
7750	2 1 3	1.244	1.807	**2.085**							-0.157	1.090	0.314				-0.482		0.084							0	0	**4.000**										7750
7825	1 2 3	0.782	0.574	-0.127								**-2.360**	0.421							0.986	0	0.166	0.763	0	1.441				0	0	0.286	**2.904**		0				7825
7876	3 2 1	-0.398	0.009	0.707							0.377	-0.514	-1.293										1.364	0		0	0	1.034	0	0	-0.974	-0.813	-1.013	0				7876
7882	1 3 2	0.320	-0.171	-0.888													0.233		**-4.000**				**-4.000**	0	**-4.000**					0								7882
7906	2 1 3	-0.500	0.266	0.127							-0.233	-0.514	0.373				-0.304		0.539				-0.700	0	0.467	0	0	-0.047	0	0	-0.284							7906
7930	2 3 1	-0.398	0.780	0.490							0.377	1.181	0.730	0.358		1.071	0.233		0.937	0.322	0	0.641	0.635	0	0.752	0	0	0.705	0	0	0.407	0.080	0.212	0				7930
7940	3 1 2	-0.398	-0.312	0.562										0.203		-0.236																						7940
7962	3 2 1	0.115	-0.376	0.707							-0.081	0.586	0.552	0.100		0.996	-0.005		1.506	-0.994	0	**-2.267**	-1.368	0	**-2.040**	0	0	**-2.256**	0	0	0.407	**2.225**	-0.453	0				7962
7984	3 2 1	-1.423	-1.147	-0.163							-1.301	1.273	**4.000**													0	0	-0.376							0	0	0	7984
8068	1 3 2	-0.398	0.073	-0.163	1.060	0.147	0.059				0.835	-0.697	0.373	-1.343		-1.805	0.710		0.255	0.093	0	0.225	0.514	0	0.353	0	0	0.940	0	0	**-4.000**	0.527	0.317	0				8068
8105	2 3 1	0.218	0.266	0.272													0.651		0.709				-0.215	0	0.581				0	0	-0.802							8105
8213	2 1 3	-0.090	-0.376	-0.453							0.072	0.769	-0.400										-0.397	0	0.068	0	0	0.235							0	0	0	8213
8260	1 3 2	**-2.141**	-0.569	-0.236							-1.225	-1.842	-1.947	1.131		0.212	0.889		-0.030							0	0	0.564	0	0	0.580	**-4.000**	0.387	0				8260

Lab no.	sample	Aerobic microorganisms 30 °C			Aerobic microorganisms 20 °C			Contaminating microorganisms			Enterobacteriaceae			Coliform bacteria 30°C			Coliform bacteria 37°C			Thermotolerant coliform bacteria			Escherichia coli			Presumptive Bacillus cereus			Coagulase-positive staphylococci			Enterococci			Gram-neg bacteria i dairy prod.			Lab no.
	A B C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	
8313	1 3 2	-0.870	-0.768	-1.294							-1.156	-0.903	-1.584										-0.445	0	0.040	0	0	-0.277	0	0	-0.163	-0.545	-0.509	0				8313
8333	3 2 1	0.320	0.330	0.925							-0.081	-0.193	**-3.732**				0.591		**-2.418**							0	0	0.658				-0.009	0.282	0				8333
8352	2 1 3	1.346	1.679	**2.375**							0.530	1.181	0.373	-0.364		-0.498	-0.840		-0.257				-1.064	0	0.182	0	0	1.504	0	0	-0.111	0.795	1.123	0				8352
8397	3 2 1	-0.911	-0.376	-0.381							0.453	0.678	0.492										0.757	0		0	0	-0.094	0	0	-0.370		-0.348	0				8397
8428	1 3 2	-0.193	0.330	0.635				0.598	-0.079	**-2.093**	-0.157	1.869	0.789				0.710		0.709				-0.336	0	0.353	0	0	1.034	0	0	0.494	0.617	-0.138	0				8428
8430	1 2 3	-0.398	0.138	-1.323										-1.961		-0.348							-0.822	0	-0.274	0	0	0.423	0	0	1.443							8430
8435	1 2 3	-0.398	**4.000**	-1.468	0.358	**4.000**	-0.792				0.148	0.861	-0.638	0.100		0.025	0.174		-0.997	0.608	0	0.344	0.271	0	0.467	0	0	1.034	0	0	-0.456	0.617	0.142	0				8435
8523	1 3 2	-0.398	-0.312	1.070							-0.614	0.448	-0.103													0	0	0.564	0	0	1.443							8523
8529	1 3 2	1.038	1.679	1.650							1.064	-0.101	1.087							0.837	0	-0.131	1.060	0	0.011	0	0	0.846	0	0	-0.543	-0.366	**-4.000**	0				8529
8568	1 2 3	1.756	1.165	1.650							-0.233	-0.514	-0.222				-0.781		0.027							0	0	0.329				-0.277	-0.278	0				8568
8626	3 1 2	**-2.654**	-0.761	-1.323							-0.386	-1.522	-0.995				-1.794		0.027	-1.739		-0.190	-0.822	0	-0.046													8626
8628	3 2 1	0.218	-0.697	1.070	0.258	-0.975	-0.530				-0.233	-0.376	-1.650	-0.312		0.660	0.054		0.425	0.437	0	0.285	1.485	0	0.410	0	0	0.423	0	0	**-2.615**	-0.813	-0.593	0				8628
8657	3 2 1	0.218	0.138	0.272							1.826	-0.147	-1.174																									8657
8696	3 2 1																																					8696
8734	1 3 2	0.731	1.614	-1.251							0.301	0.494	1.325																									8734
8742	1 3 2	0.423	0.073	0.925	-0.042	0.838	0.714				1.369	0.311	0.968	1.646		1.220	1.903		0.823	1.810	0	0.641	1.242	0	0.752	0	0	0.658	0	0	0.925							8742
8756	3 1 2	**4.000**	**4.000**	**4.000**							**4.000**	**4.000**	**4.000**										**4.000**	0	**4.000**	0	0	0.094	0	0								8756
8766	3 1 2	-0.398	0.651	0.707							0.377	-0.514	-0.103										1.971	0	-0.843	0	0	0.564	0	0	-0.974	0.080	0.737	0				8766
8891	2 3 1	**-4.000**		0.562				**-4.000**	-0.809	0.476	0.530	1.594	0.730	0.564		-0.199								0	0.353	0	0	0.376		0	-0.456							8891
8909	1 2 3	0.731	-0.119	0.127							1.140	-1.384	-0.995	0.564		0.100							1.121	0	-0.900	0	0	0.235	0	0	0.925	1.063	-0.173	0				8909
8918	3 1 2	-0.911	-0.954	-0.961				**-2.878**	0.156	-0.127							-0.781		0.084				-0.761	0	-0.559	0	0	0.329	0	0	-1.406							8918
9007	1 3 2	-0.911	-0.633	0.200										-0.724		0.772							-1.064	0	0.866													9007
9034	1 3 2	-0.398	-1.275	0.707	0.960	-0.716	0.321				1.140	-0.056	-0.698										-1.064	0	-0.274													9034
9078	1 3 2	1.833	**-4.000**	0.609										1.319		1.961	0.897		**-3.199**																			9078
9217	1 2 3	**3.193**	-0.055	**-2.411**							0.072	-0.193	-0.460													0		-0.799				-1.796	-0.068	0				9217
9429	3 1 2	0.731	0.523	1.070				0.840	0.933	0.710	1.292	-0.605	-0.103	-0.003		-0.535	0.651		-0.428	0.494	0	-0.784	1.000	0	-0.616	0	0	-0.846	0	0	0.407	0.080	0.457	0				9429
9436	3 2 1	-1.218	-0.890	-0.671							-1.453	-0.422	-1.293	-0.209		-1.207	-1.377		-1.508	-0.479	0	-0.190	-1.004	0	-0.274	0	0	0.611	0	0	-0.284	0.349	-0.768	0				9436
9451	3 2 1	1.141	-0.119	0.055	0.759	0.406	-1.054				1.445	0.952	0.552	-0.209		0.697	0.412		0.425	0.208	0	-0.190	-0.154	0	-0.046	0	0	-0.235	0	0	-0.111	0.170	-1.013	0				9451
9453	3 1 2	-0.398	-0.697	-0.671				0.166	-1.374	-0.263	-0.386	-0.697	0.016													0	0	0.705	0	0	0.839	0.617	-0.768	0				9453
9512	1 3 2	-1.321	-0.761	-1.033							-1.301	-0.010	1.384													0	0	-0.705										9512
9559	3 2 1	-0.705	-0.119	-0.453				0.220	-0.950	0.418	-1.225	0.632	**-4.000**				-0.900		**-4.000**				-0.457	0	-0.729	0	0	-0.235	0	0	-0.111				0	0	0	9559
9569	2 1 3	1.756	-0.633	**-4.000**				0.678	0.439	-1.315	0.072	1.136	**-4.000**	0.358		**-2.850**	0.531		**-3.954**	**2.955**	0	**-2.742**		0	**-2.495**	0	0	**-2.162**	0	0	**-4.000**	0.706	-0.838	0				9569
9662	1 3 2	-0.398	-0.633	0.417							-0.538	-0.330	0.492	-1.961		0.436	**-2.093**		1.392				-0.154	0	0.353	0	0	-1.034	0	0	-0.111	-0.903	**-2.063**	0				9662
9747	3 2 1	-0.398	-1.275	-1.686																						0	0	0.000										9747
9783	1 3 2	0.423	0.715	0.707																																		9783
9890	3 1 2	-0.295	0.330	0.272	0.358	-0.112	0.125				**2.818**	0.540	0.552				1.187		1.221				0.453	0	1.151	0	0	1.128	0	0	-0.284							9890
9903	3 2 1	0.218	-0.312	0.417							-0.233	0.998	-0.043										-0.336	0	0.752	0	0	-0.611	0	0	-0.543	-0.098	-0.208	0				9903
9923	1 3 2	1.346	-0.505	0.417							0.606	-0.330	0.730				1.068		1.278	-0.136		-0.724	-0.275	0	0.296					0	0.407							9923
9950	2 3 1	0.628	1.358	-1.178				0.786	0.815	0.223										1.009		-0.309				0	0	0.658										9950

Internal and external control for microbiological analyses of food and drinking water

All analytical activities require work of a high standard that is accurately documented. For this purpose, most laboratories carry out some form of internal quality assurance, but their analytical work also has to be evaluated by an independent party. Such external quality control of laboratory competence is commonly required by accreditation bodies and can be done by taking part in proficiency testing (PT).
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- Expert support.
- Tool for inspections regarding accreditation.
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