Rapport 26 – 2013

Proficiency testing

Food Microbiology

– October 2013

by Laurence Nachin, Christina Normark and Irina Boriak

LIVSMEDELS VERKET
NATIONAL FOOD AGENCY, Sweden

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).
In a proficiency test, identical test material is analysed by a number of laboratories using their routine methods. The organiser evaluates the results and compiles them in a report.

The National Food Agency's PT program offers

- External and independent evaluation of laboratories analytical competence.
- Improved knowledge of analytical methods used by laboratories with respect to various types of organisms.
- Expert support
- Tool for inspections regarding accreditation.
- Free extra material for follow-up analyses

For more information visit our website: www.slv.se/absint

The National Food Agency's reference material

As a complement to the proficiency testing, National Food Agency produces also reference material (RM) for internal quality control: a total of 7 RM for food and drinking water microbiological analyses, including pathogens, are available.
Information available on our website: www.slv.se/RM-micro

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Proficiency Testing

Microbiology – Food

October 2013

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 dairy products

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Abbreviations

Media

BcS	Bacillus cereus Selective agar
BGB	Brilliant Green Broth
BP	Baird-Parker agar
BP+RPF	Baird-Parker agar + Rabbit Plasma Fibrinogen
EC medium	Escherichia coli medium
PCA	Plate count agar
MPCA	Milk Plate Count agar
MPN	Most Probable Number
MYP	Mannitol-Egg Yolk-Polymyxin agar
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

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. many 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 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

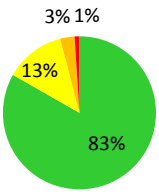
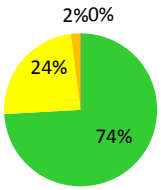
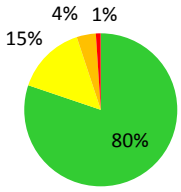
Results of the PT round October 2013

General outcome

Samples were sent to 199 laboratories, 48 in Sweden, 134 in other European countries, and 17 outside Europe. 197 laboratories reported results, 65 (33 %) provided at least one result that received an annotation. In the previous round (October 2012) with similar analyses, the proportion was 50 %.

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*			*Micrococcus sp.* *Pediococcus acidilactici* *Staphylococcus xylosus*			*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	4	***Micrococcus*** ***P. acidilactici*** ***S. xylosus***	1	1	***Micrococcus*** ***E. coli*** ***B. cereus*** ***S. aureus***	0	3
	20 °C		3	5		0	0		0	8
Contaminating microorg.		***K. pneumoniae*** ***E. coli*** ***E. faecium***	0	0	***Micrococcus*** ***S. xylosus***	12	8	***Micrococcus*** ***E. coli*** ***B. cereus*** ***S. aureus***	0	0
Enterobacteriaceae		***K. pneumoniae*** ***E. coli***	2	3	-	0	-	***E. coli***	0	1
Coliforms	30 °C	***K. pneumoniae*** ***E. coli***	0	2	-	0	-	***E. coli***	2	2
	37 °C		0	3		0	-		1	6
Thermotol. coliform		***K. pneumoniae*** ***E. coli***	0	3	-	0	-	***E. coli***	0	3
E. coli		***E. coli***	2	2	-	0	-	***E. coli***	5	5
Presump. *B. cereus*		-	2	-	-	1	-	***B. cereus***	1	4
Coag. pos. Staph.		-	2	-	(*S. xylosus*)	11	-	-	2	5
Enterococci		***E. faecium***	1	4	(*P. acidilactici*)	43*	-	***S. aureus***	0	-
Gram-neg microog. in past. dairy prod.		***K. pneumoniae*** ***E. coli***	0	-	-	0	-	***E. coli***	12	-

- : no target organism or no value; (*microorganism*): false positive; * analysis not evaluated

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

The colonies counted for these analyses were mainly from the strains of *Pediococcus acidilactici* and *Staphylococcus xylosus* present at the highest concentration in mixture B. At NFA, *P. acidilactici* formed smaller colonies, especially under incubation at 20°C which could explain the quite large distribution of the results.

Mixture C

The colonies counted for these analyses were mainly from the strains of *Micrococcus sp.* 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	36	4.01	0.09	1	0	2	36	4.10	0.40	0	0	0	36	4.69	0.19	0	2	1
PCA	27	4.01	0.10	1	0	2	27	4.19	0.40	0	0	0	27	4.66	0.21	0	2	1
Petrifilm™	3	4.02	0.07	0	0	0	3	3.84	0.08	0	0	0	3	4.74	0.02	0	0	0

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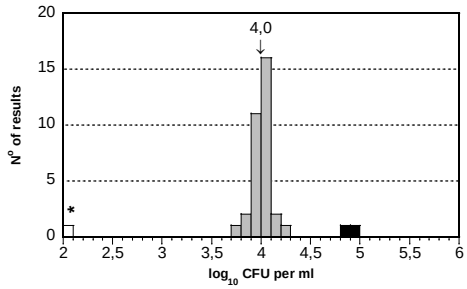

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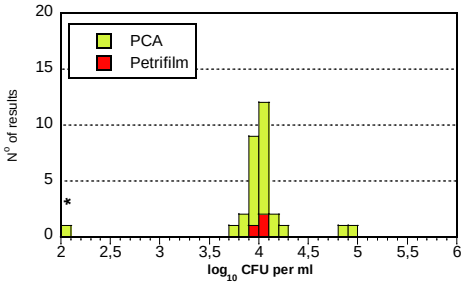

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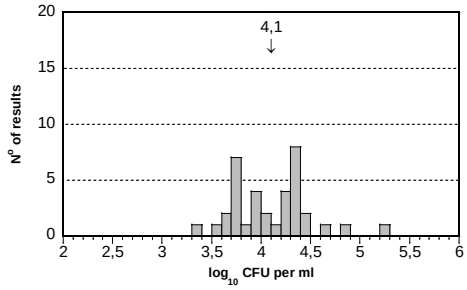

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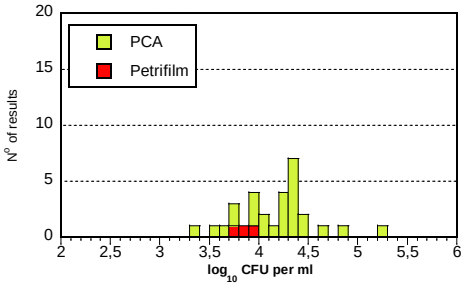

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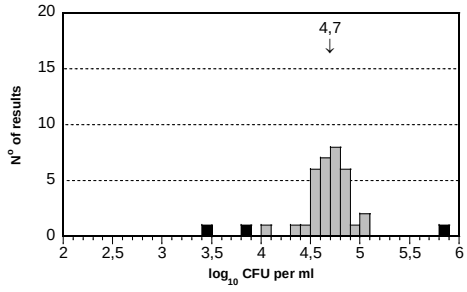

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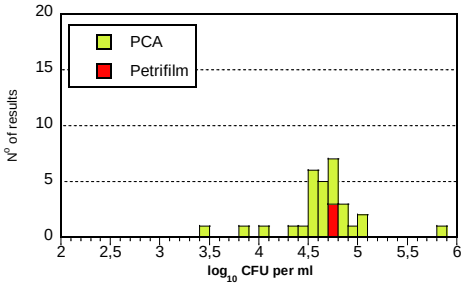

Results of aerobic microorganisms analysis, 30 °C

Medium	Mixture A						Mixture B						Mixture C					
	n	m	s	F	<	>	n	m	s	F	<	>	n	m	s	F	<	>
Total	186	4.04	0.09	0	2	6	186	4.26	0.26	1	0	1	186	4.83	0.12	0	3	2
PCA	104	4.03	0.09	0	1	5	104	4.35	0.22	1	0	1	104	4.84	0.12	0	3	2
Petrifilm™	35	4.06	0.08	0	0	1	35	4.03	0.18	0	0	0	35	4.81	0.12	0	0	0
MPCA	23	4.04	0.06	0	0	0	23	4.36	0.11	0	0	0	23	4.83	0.07	0	0	0
TSA	12	4.05	0.10	0	0	0	12	4.21	0.25	0	0	0	12	4.86	0.10	0	0	0
TGE	5	4.00	0.13	0	1	0	5	4.21	0.31	0	0	0	5	4.80	0.14	0	0	0
TEMPO	4	3.92	0.05	0	0	0	4	3.92	0.32	0	0	0	4	4.72	0.14	0	0	0

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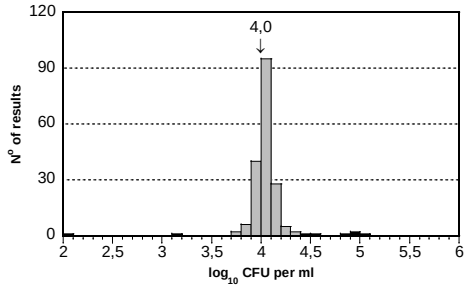

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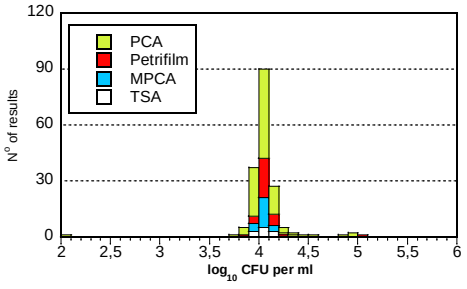

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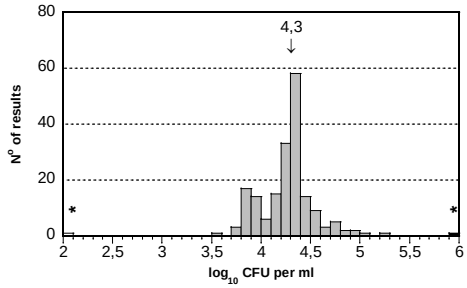

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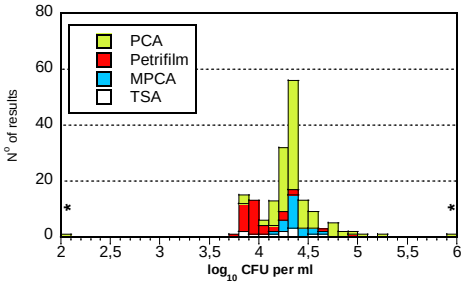

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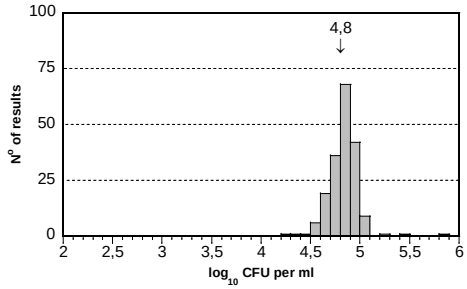

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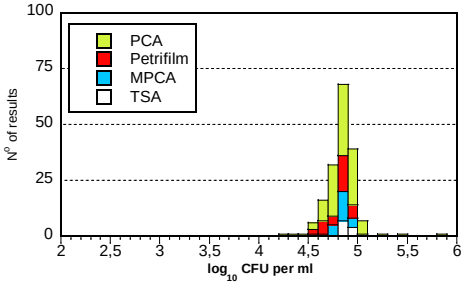

Overall, there is no clear differences in results depending on the medium chosen for mixtures A and C. For mixture B, the results are more spread and form two distinct peaks for incubation at 30°C; the peak with lower values being linked to the use of Petrifilm™. The average values obtained with Petrifilm™ at both 30°C and 20°C correspond approximately to the concentration of *S. xylosus* present in mixture B which suggests that the strain of *P. acidilactici* might not form visible colonies on Petrifilm™ and would explain the lower average values and standard deviation obtained.
The few laboratories using the MPN-based method Tempo® obtained lower average values for all mixtures for the analysis performed at 30°C.

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 pneumonia*e and *Escherichia coli*.

Mixture B

At NFA, three types of colonies could be distinguished, indicating that the three strains present in mixture B can form colonies on sugar-free agar, i.e. *Pediococcus acidilactici*, *Staphylococcus xylosus* and *Micrococcus sp.* However the colonies of *P. acidilactici* were extremely small (pin-point) and should therefore not be counted according to the method ISO 13559:2002 / IDF 153:2002.

Mixture C

As for the analysis of aerobic microorganisms, colonies were mainly from the strains of *Micrococcus sp*. and *S. aureus*.

Results of contaminating microorganisms analysis

Method	Mixture A						Mixture B						Mixture C					
	n	m	s	F	<	>	n	m	s	F	<	>	n	m	s	F	<	>
Total	23	3.78	0.31	0	0	0	24	3.78	0.15	3	1	1	24	4.49	0.52	0	0	0
ISO 13559:2002	11	3.85	0.26	0	0	0	12	3.77	0.10	0	0	1	12	4.74	0.13	0	0	0
Other	12	3.72	0.35	0	0	0	12	3.79	0.21	3	1	0	12	4.23	0.65	0	0	0

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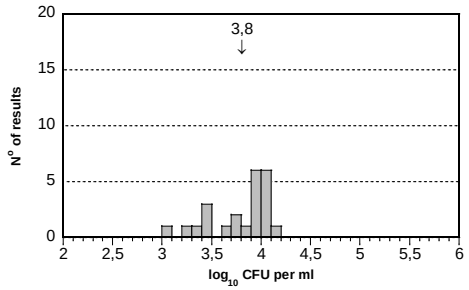

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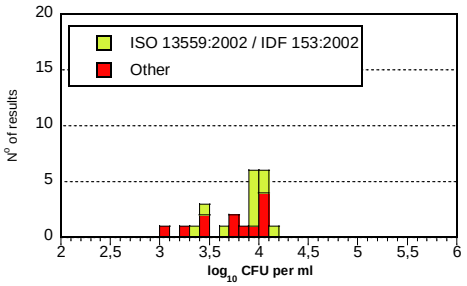

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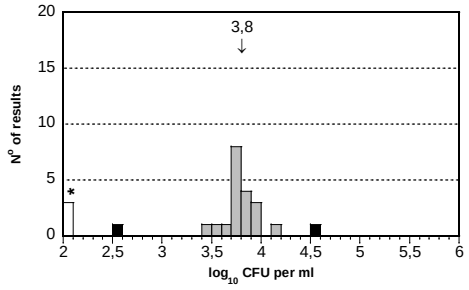

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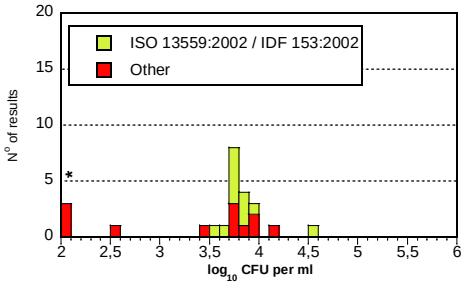

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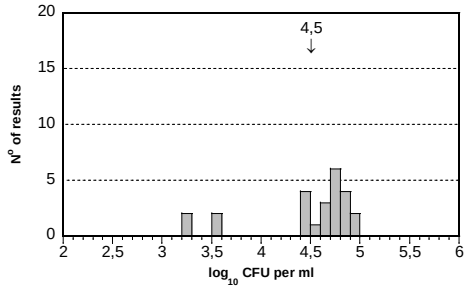

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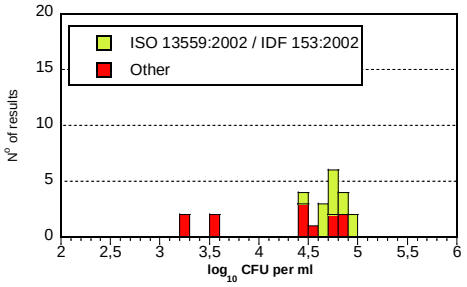

Few laboratories participate in this analysis and the results are spread for all mixtures. Half of the laboratories reported to follow the standard method ISO 13559:2002 / IDF 153:2002, but all used the same medium, sugar-free agar.

Enterobacteriaceae

Mixture A
Two target-organisms were present in the mixture: *Escherichia coli* and *Klebsiella pneumoniae*.

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

Mixture C
A strain of *Escherichia coli* was target-organism for the 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	148	3.37	0.12	3	4	0	147	-	-	1	-	-	148	3.02	0.16	0	0	2
VRBG	109	3.36	0.12	2	3	0	109	-	-	1	-	-	109	2.99	0.17	0	0	1
Petrifilm™	33	3.39	0.12	0	0	0	32	-	-	0	-	-	33	3.11	0.11	0	0	0

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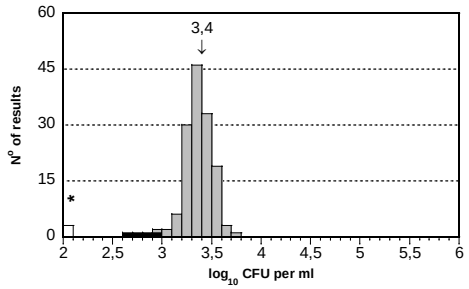

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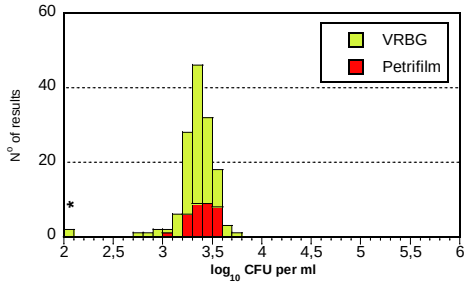

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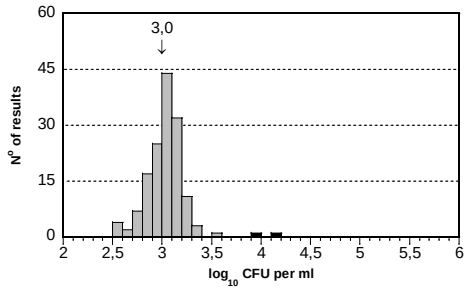

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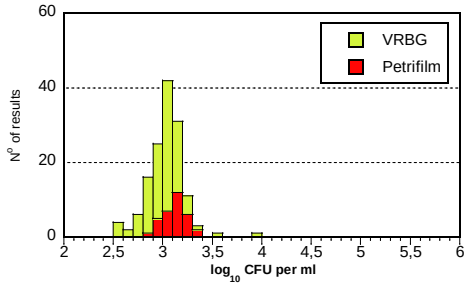

For mixture C, the laboratories using Petrifilm™ reported values slightly higher than those using VRBG. It is possible that the indicator dye present in Petrifilm™ facilitated the reading of colonies and therefore led to a higher count for mixture C.

Coliform bacteria 30 °C and 37 °C

Mixture A
Both *Escherichia coli* and *Klebsiella pneumoniae* were target-organisms for thes analyses.

Mixture B
Mixture B did not contain any target-organism.

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	63	3.31	0.13	0	0	1	62	-	-	0	-	-	63	2.99	0.16	1	0	1
VRB	42	3.30	0.13	0	0	1	41	-	-	0	-	-	42	2.96	0.15	0	0	1
TSA/VRB	7	3.37	0.10	0	0	0	7	-	-	0	-	-	7	3.07	0.26	0	0	0
Petrifilm™ CC	5	3.34	0.13	0	0	0	5	-	-	0	-	-	5	3.07	0.11	1	0	0
Petrifilm™ EC/CC	4	3.32	0.01	0	0	0	4	-	-	0	-	-	4	3.05	0.17	0	0	0

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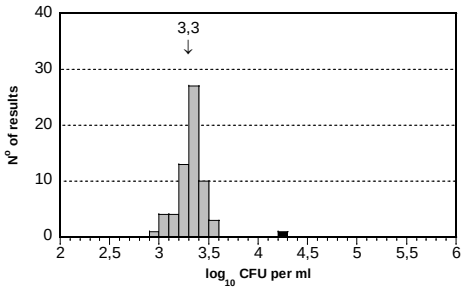

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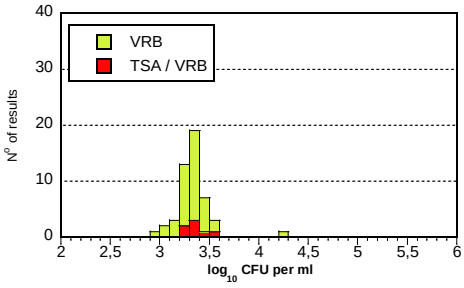

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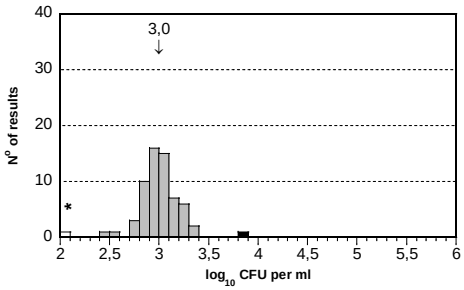

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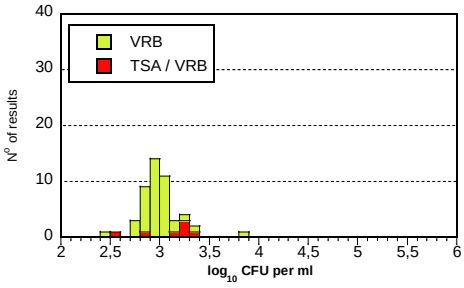
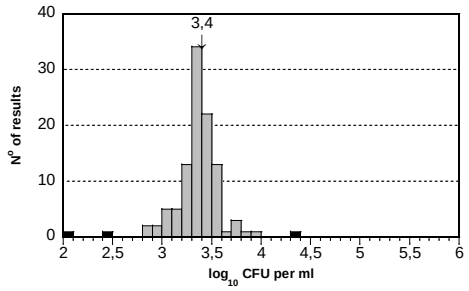


Results of coliform bacteria analysis, 37 °C

Medium	Mixture A						Mixture B						Mixture C					
	n	m	s	F	<	>	n	m	s	F	<	>	n	m	s	F	<	>
Total	105	3.36	0.18	0	2	1	106	-	-	0	-	-	105	3.03	0.17	1	4	2
VRB	51	3.36	0.16	0	1	1	51	-	-	0	-	-	50	2.98	0.16	0	2	1
TSA/VRB	10	3.45	0.18	0	0	0	10	-	-	0	-	-	10	3.11	0.15	0	0	0
Petrifilm™ CC	15	3.41	0.11	0	0	0	14	-	-	0	-	-	14	3.13	0.06	0	0	1
Petrifilm™ EC/CC	14	3.40	0.10	0	0	0	14	-	-	0	-	-	14	3.09	0.14	0	0	0
BGB	6	3.27	0.32	0	1	0	7	-	-	0	-	-	6	3.05	0.25	0	1	0

A



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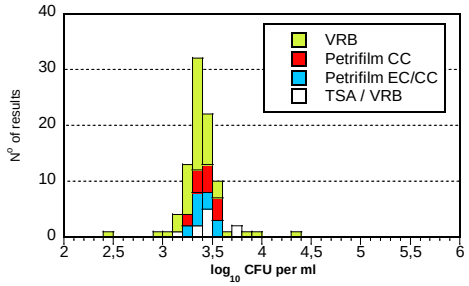

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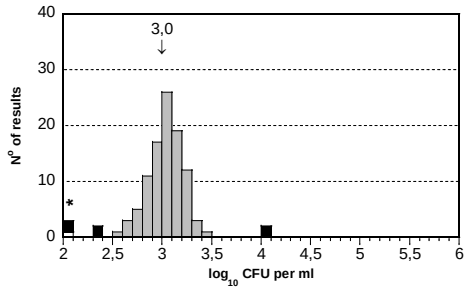

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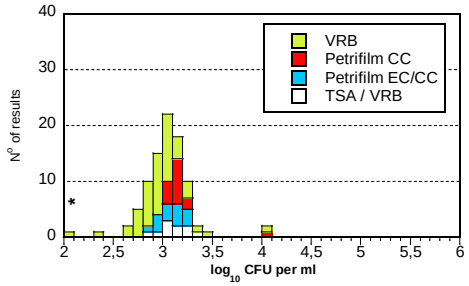


The analysis of coliform bacteria did not cause any difficulties and the results reported are similar independently of the medium used.

Thermotolerant coliform bacteria

Mixture A
Both *Escherichia coli* and *Klebsiella pneumoniae* are thermotolerant coliform bacteria.

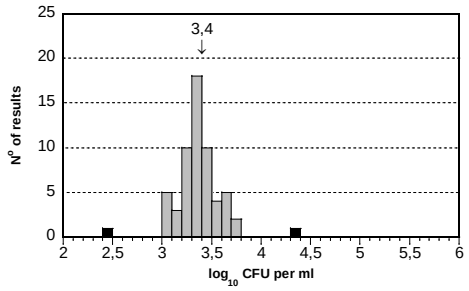
Mixture B
Mixture B did not contain any target-organism for the analysis.

Mixture C
A strain of *Escherichia coli* was target-organism.

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	59	3.36	0.17	0	1	1	59	-	-	0	-	-	60	3.10	0.13	0	1	1
TSA/VRB	28	3.43	0.13	0	1	1	28	-	-	0	-	-	28	3.14	0.11	0	0	0
VRB	13	3.31	0.12	0	0	0	13	-	-	0	-	-	13	3.10	0.12	0	0	0
EC medium	7	3.29	0.32	0	0	0	7	-	-	0	-	-	8	3.05	0.22	0	1	1
Petrifilm™ EC/CC	5	3.38	0.17	0	0	0	5	-	-	0	-	-	5	3.04	0.07	0	0	0

A



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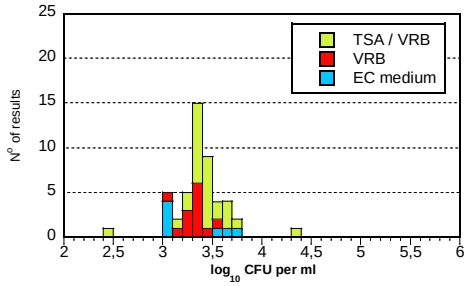

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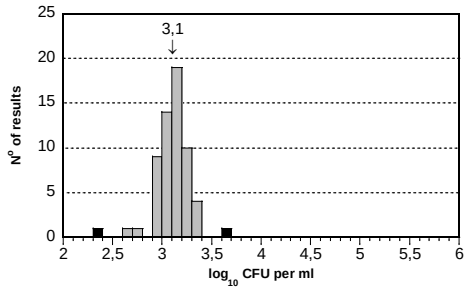

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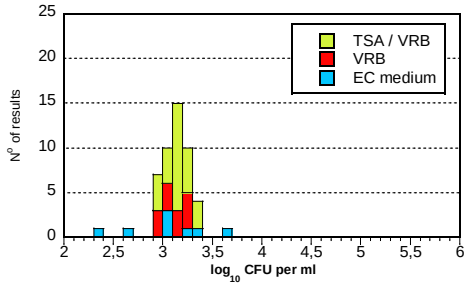


Laboratories following an MPN-based method with the use of EC medium obtained results more spread, some of which were identified as outliers for mixture C.

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

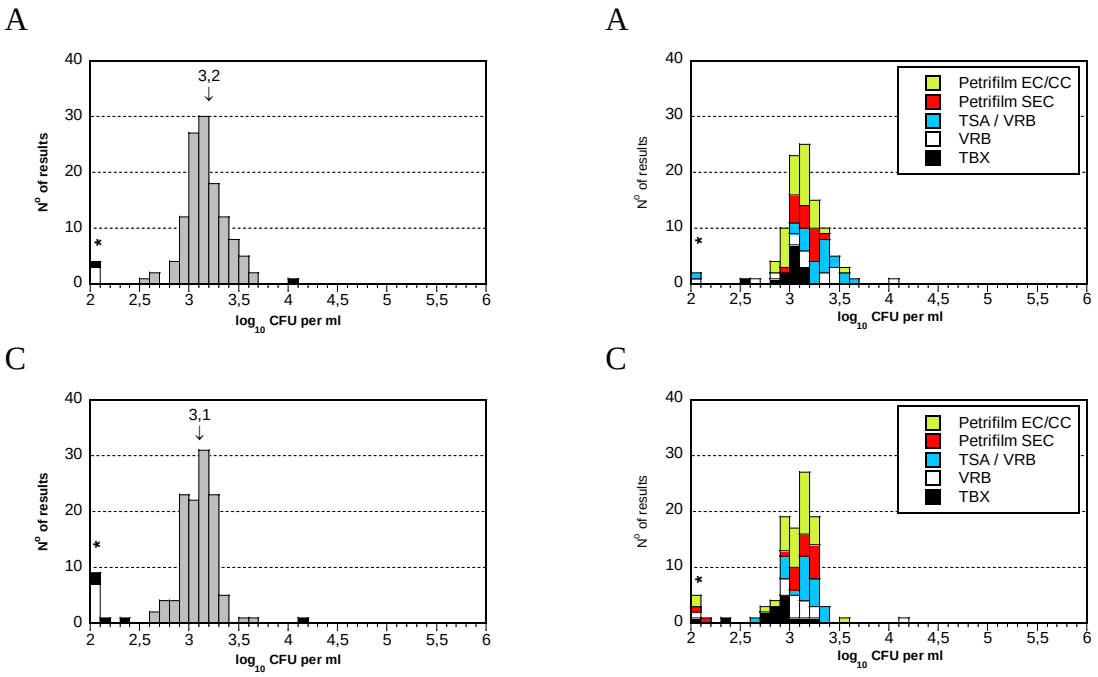
Mixture B did not contain any target-organism.

Mixture C

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

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	126	3.16	0.20	3	1	1	131	-	-	0	-	-	129	3.09	0.16	7	5	1
Petrifilm™ EC/CC	34	3.09	0.14	0	0	0	34	-	-	0	-	-	34	3.09	0.15	1	1	0
Petrifilm™ SEC	17	3.16	0.12	0	0	0	17	-	-	0	-	-	17	3.15	0.08	1	1	0
TSA/VRB	22	3.30	0.16	1	0	0	22	-	-	0	-	-	22	3.13	0.16	0	0	0
VRB	14	3.18	0.26	1	0	1	14	-	-	0	-	-	14	3.08	0.12	1	0	1
TBX	14	3.00	0.16	0	0	0	15	-	-	0	-	-	15	2.93	0.14	0	2	0



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: 3.00 versus 3.16 and 2.93 versus 3.09 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.

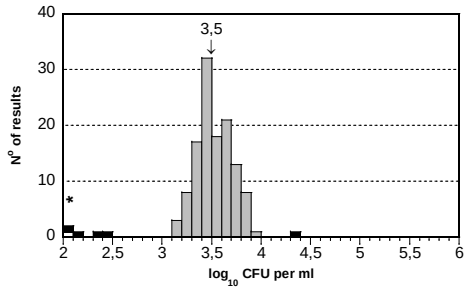
Mixture B
Mixture B did not contain any target-organism for this analysis

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

Results of presumptive B. cereus analysis

Method	Mixture A						Mixture B						Mixture C					
	n	m	s	F	<	>	n	m	s	F	<	>	n	m	s	F	<	>
Total	128	-	-	2	-	-	127	-	-	1	-	-	127	3.52	0.18	1	4	1
NMKL 67:2010	77	-	-	0	-	-	77	-	-	0	-	-	76	3.54	0.16	1	3	1
ISO 7932:2004	22	-	-	0	-	-	22	-	-	0	-	-	23	3.45	0.21	0	0	0

C



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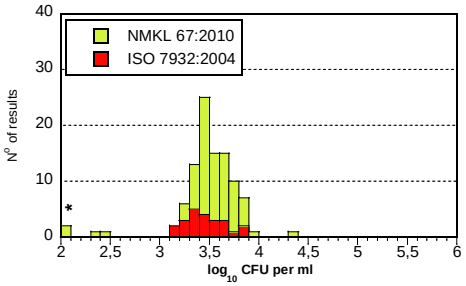


The NMKL method 67:2010 describes the confirmation of suspected colonies from blood-agar plates on BcS agar or Cereus-Ident-Agar (chromogenic medium) while the ISO method 7932:2004 describes first an isolation on MYP medium followed by a confirmation of suspected colonies on blood-agar. The results obtained with the ISO method are distributed in a peak slightly shifted towards lower values compared to the results obtained with the NMKL method.

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 but a strain of *Staphylococcus xylosus* was included. Twelve laboratories reported a false positive result. On BP-agar, colonies could be suspected as coagulase positive staphylococci but they were negative when further tested for coagulase activity. On BP-agar with RPF, colonies of *S. xylosus* are atypical without precipitation zone.

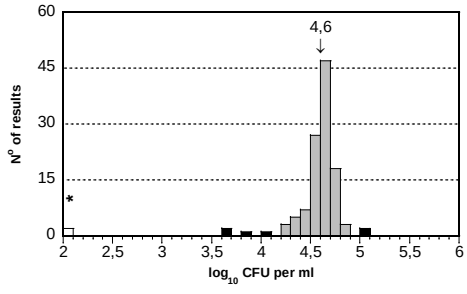
Mixture C

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	118	-	-	3	-	-	114	-	-	12	-	-	118	4.60	0.12	2	4	2
BP	75	-	-	1	-	-	71	-	-	9	-	-	75	4.59	0.12	1	4	2
BP + RPF	21	-	-	0	-	-	21	-	-	3	-	-	21	4.65	0.10	1	0	0
Petrifilm™ Staph	15	-	-	1	-	-	15	-	-	0	-	-	15	4.60	0.11	0	0	0

C



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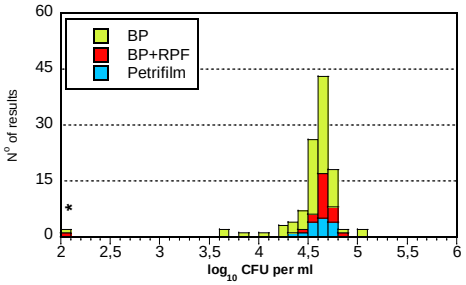

Almost all laboratories that reported a false positive result for mixture B used BP agar which indicates that confirmation was not performed or failed. For mixture C, there is no difference in results depending on the medium used.

Enterococci

Mixture A

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

Mixture B

Mixture B did not contain any Enterococci. At NFA, the strain of *Pediococcus acidilactici* present in mixture B formed pinkish colonies on Slanetz-Bartley medium. Colonies inoculated on BEA agar did not hydrolyse esculine after 2 hours of incubation at 44°C but a black color could be seen in the medium after 24 hours of incubation. These characteristics might explain that 43 % of the laboratories that performed the analysis reported a positive result.

Due to the difficulty in the analysis interpretation, 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

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	78	3.93	0.13	1	0	3	77	-	-	33	-	-	77	-	-	0	-	-
S&B	59	3.92	0.14	1	0	2	59	-	-	26	-	-	59	-	-	0	-	-
TSA/S&B	9	3.93	0.08	0	0	0	8	-	-	5	-	-	8	-	-	0	-	-

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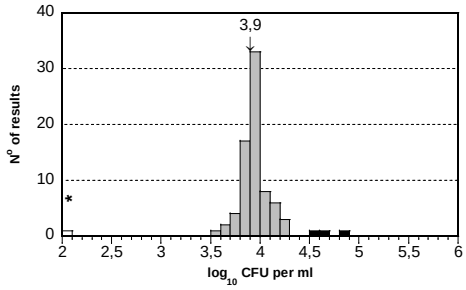
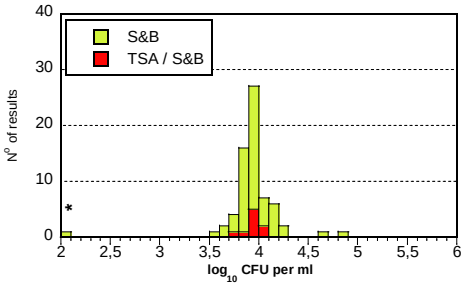


A



Most of the laboratories performing the analysis of enterococci followed the method NMKL 68:2011 and /or used S&B agar. Therefore, the high proportion of false positive results for mixture B cannot be linked to any particular method or medium but must be accounted for the characteristics of the *P. acidilactici* strain present in the mixture.

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
Mixture B did not contain any target-organism 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	8	-	-	0	-	-	8	-	-	0	-	-	8	-	-	1	-	-
NMKL 192:2011	6	-	-	0	-	-	6	-	-	0	-	-	6	-	-	1	-	-

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.

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 laboratories 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.

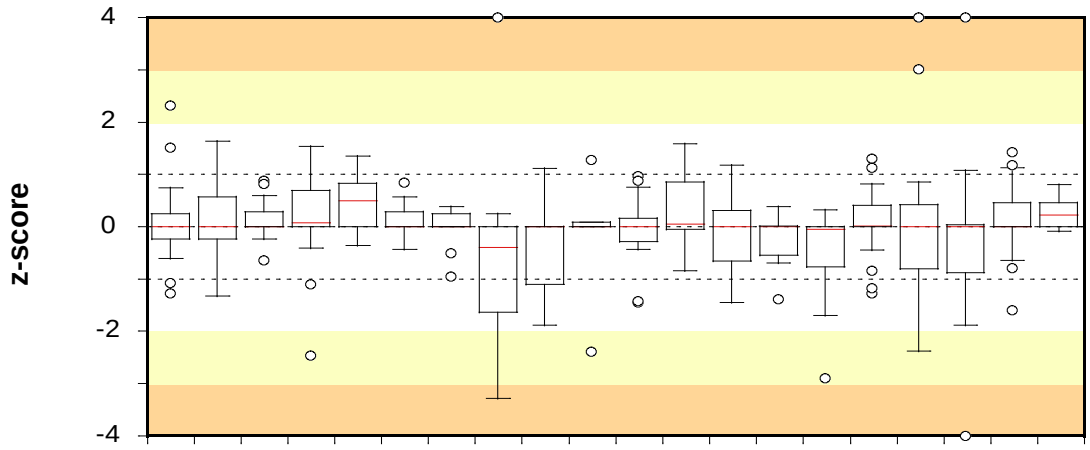
All the results from each laboratory – outliers included and false results excluded – were compiled into a box plot based on their z-scores. The smaller and the more centred around zero the box of a laboratory is, the closer its results are to the general mean values calculated for all laboratories results.

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.

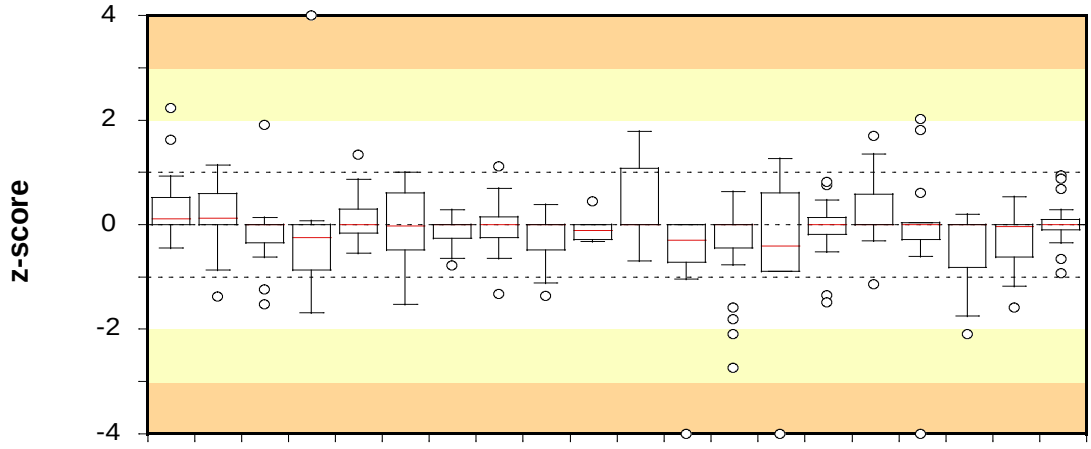
Information on the results processing and recommendations for follow-up work are given in the Scheme Protocol (2). Samples for follow-up can be ordered, free of charge via our website:www.slv.se/pt_extra

Box plots and numbers of deviating results for each laboratory

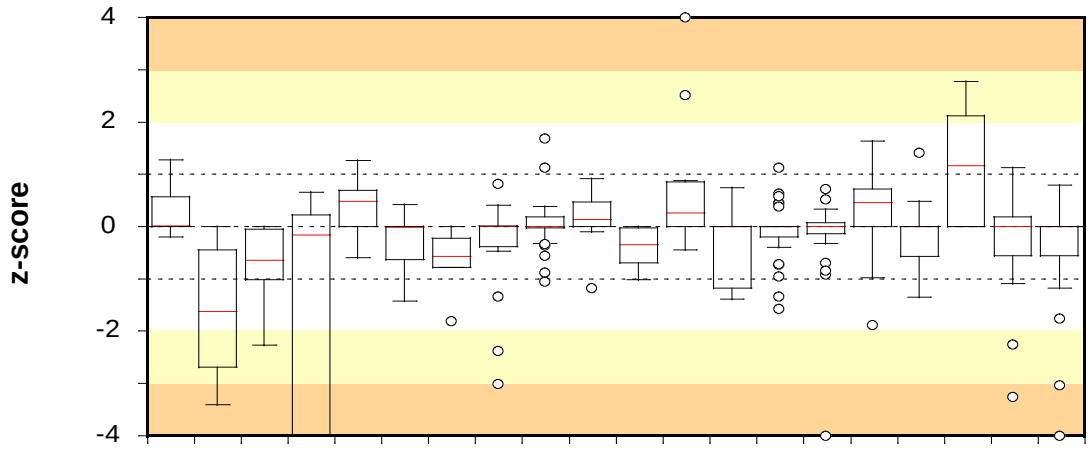
- *The plots are based on the laboratory results from all analyses transformed into z-scores calculated according to the formula: $z = (x-m)/s$, where x is the result of the individual laboratory, m is the mean of the results of all participating laboratories, and s is the standard deviation.*
- *Correct 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.*



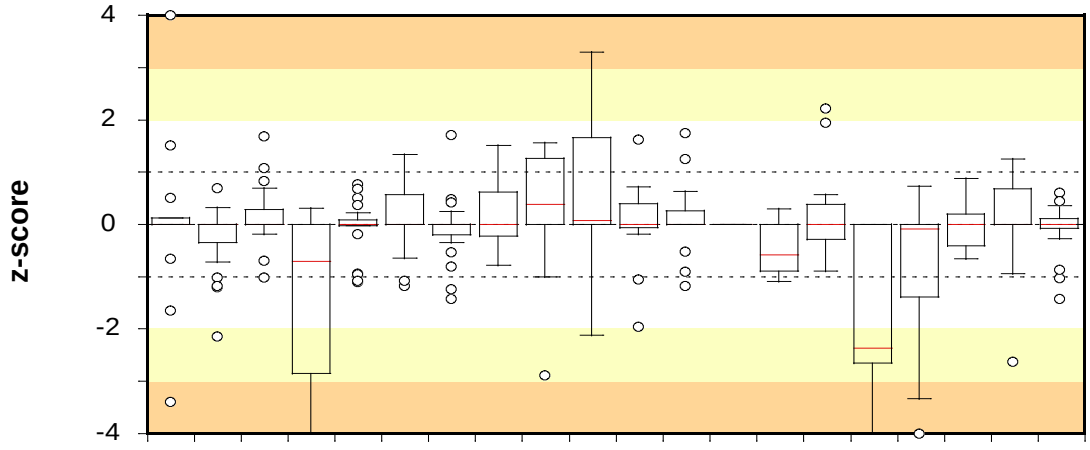
Lab no	1081	1149	1254	1594	1970	2035	2058	2072	2324	2350	2386	2402	2459	2505	2553	2637	2659	2670	2704	2720
No. of results	15	18	20	26	29	14	9	26	17	5	20	12	18	15	10	24	12	13	18	6
False positive	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
False negative	-	-	-	-	-	1	-	-	-	1	1	-	-	-	-	-	-	2	-	-
Low outliers	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
High outliers	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	1	1	-	-



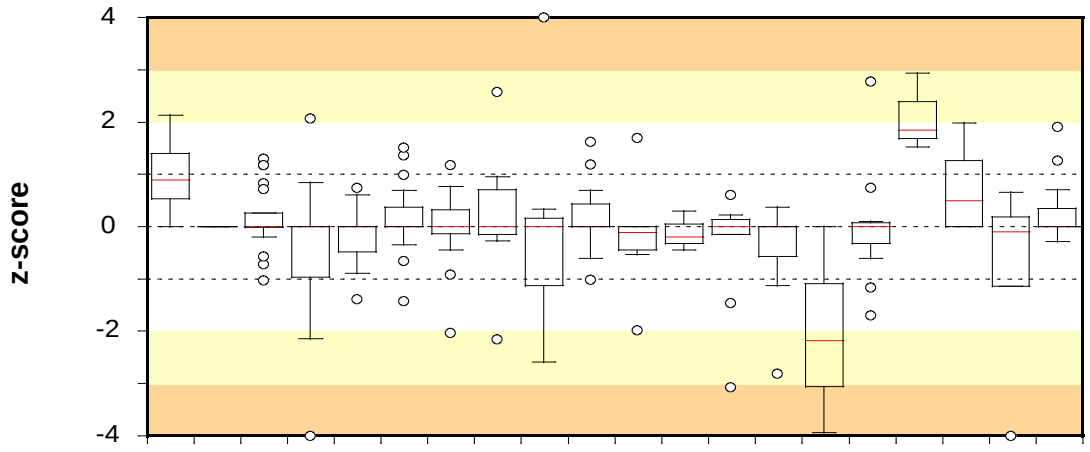
Lab no	2745	2757	2764	2842	2920	2941	3055	3159	3225	3243	3305	3327	3346	3452	3457	3511	3533	3543	3587	3588
No. of results	23	15	14	15	9	12	12	18	12	6	17	12	24	6	14	16	13	12	20	26
False positive	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
False negative	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	1	-	-
Low outliers	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	1	-	-	-
High outliers	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



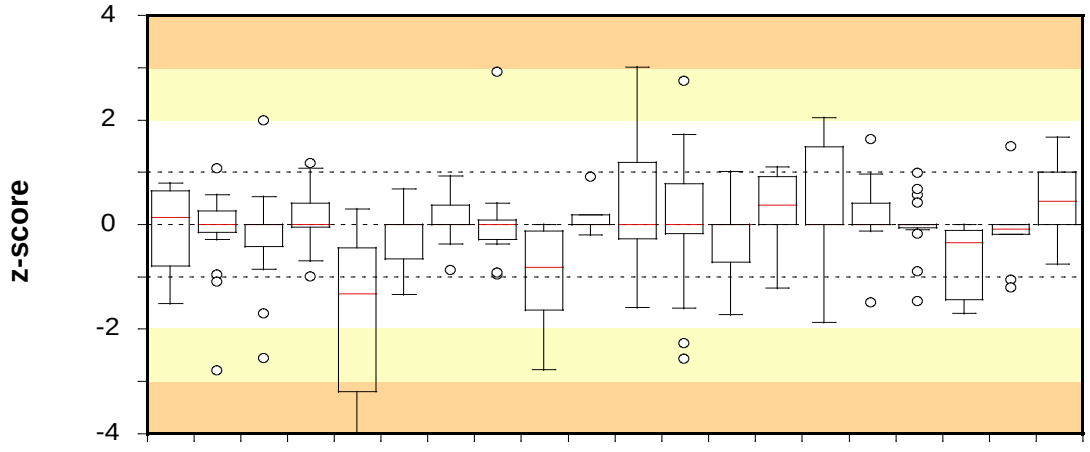
Lab no	3626	3652	3831	3925	4047	4050	4064	4100	4153	4171	4246	4266	4278	4288	4305	4339	4352	4400	4562	4633
No. of results	26	6	12	6	15	17	6	20	26	14	11	12	9	26	21	29	24	9	20	26
False positive	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-
False negative	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Low outliers	-	-	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	1
High outliers	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-



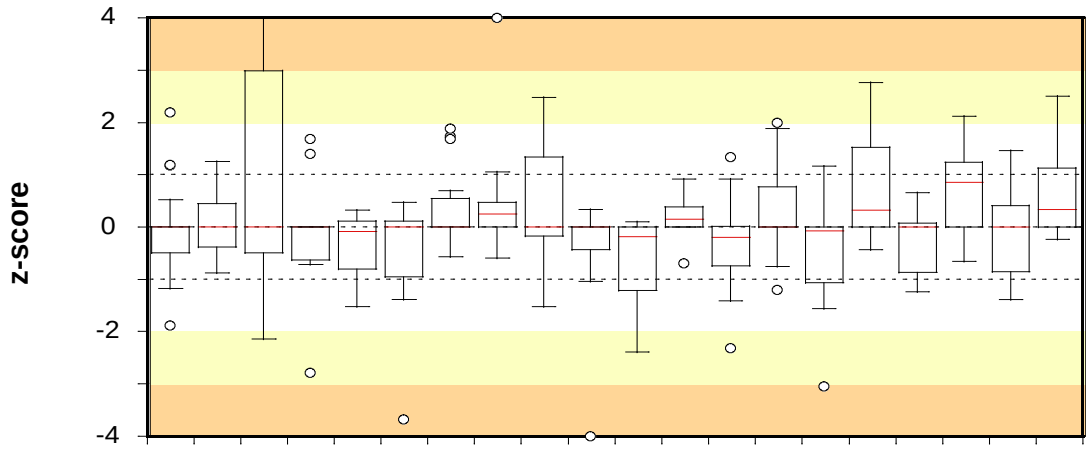
Lab no	4635	4664	4889	4951	4955	4980	5018	5100	5119	5162	5197	5201	5204	5220	5221	5250	5290	5304	5329	5333
No. of results	13	21	26	13	21	18	26	7	9	14	14	14	-	6	18	5	20	9	20	20
False positive	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
False negative	-	1	-	1	-	-	-	2	-	-	-	1	-	-	-	1	-	-	-	-
Low outliers	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-
High outliers	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



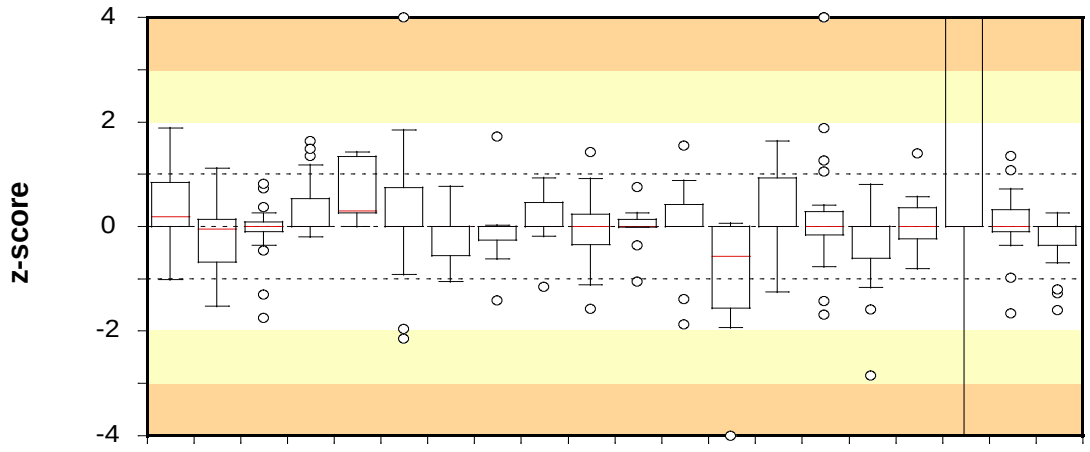
Lab no	5338	5350	5352	5380	5419	5446	5494	5545	5553	5615	5632	5701	5801	5883	5993	6109	6175	6224	6232	6253
No. of results	6	-	23	15	20	21	18	14	8	20	12	3	9	15	3	12	3	9	6	20
False positive	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
False negative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Low outliers	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-
High outliers	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-



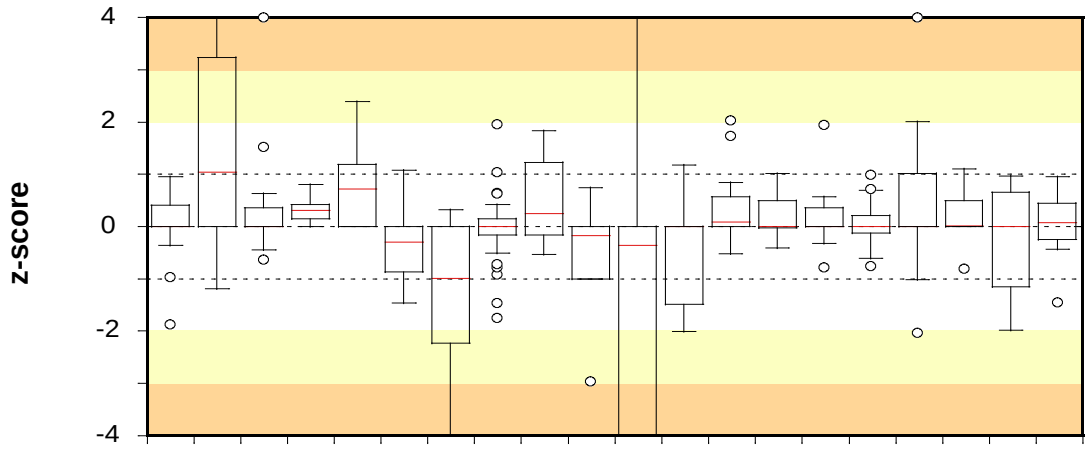
Lab no	6258	6343	6352	6368	6380	6456	6490	6594	6628	6647	6658	6707	6730	6762	6852	6885	6944	6958	6971	7024
No. of results	7	15	20	23	9	26	14	12	6	5	6	31	14	9	17	20	19	7	9	9
False positive	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-
False negative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Low outliers	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
High outliers	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



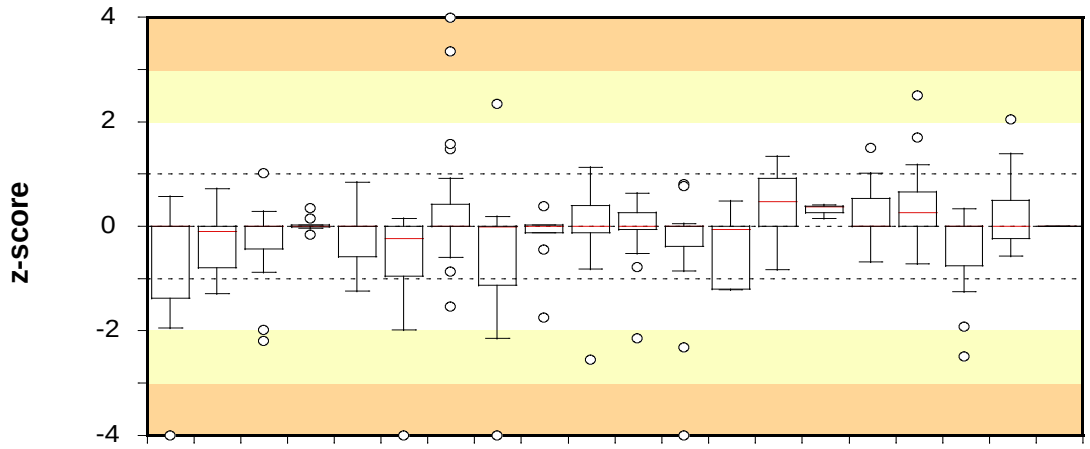
Lab no	7096	7182	7191	7207	7232	7242	7248	7253	7296	7334	7336	7449	7543	7564	7596	7627	7688	7728	7750	7825
No. of results	20	21	21	11	3	9	23	17	9	13	7	9	15	32	24	11	20	21	12	12
False positive	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	1
False negative	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Low outliers	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-
High outliers	-	-	4	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-



Lab no	7876	7877	7906	7930	7940	7946	7962	7984	8066	8068	8105	8213	8228	8255	8260	8313	8333	8352	8380	8397
No. of results	17	8	19	26	6	35	26	12	19	29	12	15	11	26	26	17	14	23	27	17
False positive	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
False negative	-	-	1	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-
Low outliers	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	-
High outliers	-	-	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-	7	-	-



Lab no	8428	8430	8435	8523	8529	8568	8626	8628	8657	8734	8742	8756	8766	8891	8909	8918	8961	9002	9007	9034
No. of results	25	14	29	6	19	14	18	29	6	6	13	13	17	20	20	18	9	18	9	12
False positive	-	1	-	-	1	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-
False negative	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Low outliers	-	-	-	-	-	-	1	-	-	-	4	-	-	-	-	-	-	-	-	-
High outliers	-	2	1	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-



Lab no	9051	9086	9217	9245	9429	9436	9451	9453	9512	9559	9569	9662	9747	9753	9783	9890	9903	9923	9950
No. of results	18	8	14	9	29	26	29	16	9	26	28	23	6	21	3	21	23	15	14
False positive	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-
False negative	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Low outliers	1	-	-	-	-	1	-	2	-	-	-	1	-	-	-	-	-	-	-
High outliers	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-

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	*Klebsellia pneumoniae*	SLV-186
	Escherichia coli	SLV-165
	Enterococcus faecium	SLV-459
B	*Micrococcus sp.*	
	Pediococcus acidilactici	SLV-213
	Staphylococcus xylosus	SLV-283
C	*Micrococcus sp.*	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	4.36	0.04	4.88	0.03
Aerobic microorganisms 20˚C NMKL-method no. 86	4.08	0.04	4.34	0.04	4.87	0.05
Contaminating microorganisms ISO-method no. 13559:2002 IDF-method no. 153:2002	4.07	0.03	3.88	0.06	4.93	0.04
Enterobacteriaceae NMKL-method nr. 144	3.47	0.08	–	–	3.23	0.04
Coliform bacteria 30˚C NMKL-method no. 44	3.36	0.11	–	–	3.16	0.05
Coliform bacteria. 37˚C NMKL-method no. 44	3.43	0.06	–	–	3.17	0.04
Thermotolerant coliform bacteria NMKL-method no. 125	3.46	0.08	–	–	3.24	0.03
Escherichia coli NMKL-method no. 125	2.99**	0.14**	–	–	3.24	0.03
Presumptive *Bacillus cereus* NMKL-method no. 67	–	–	–	–	3.60	0.05
Coagulase-positive *Staphylococci* NMKL-method no. 66	–	–	–	–	4.74	0.04
Enterococci NMKL-method no. 68	3.93	0.03	–	–	–	–
Gram-negative bacteria in pasteurized milk and cream. Detection of recontamination* NMKL-method no. 192	pos	–	neg	–	pos	–

– No target organism or no value
* NFA is not accredited for this analysis; ** 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 2013

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 analysis of Enterococci in mixture B, are not included in the calculation of z-values (Annex 2) or the number of deviant results (box plots)

Lab no	Code no			Aerobic microorg. 30 °C			Aerobic microorg. 20 °C			Contaminating microorg.			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 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	1	3	2	4.08	4.86	4.92	-	-	-	-	-	-	3.32	<1	2.84	-	-	-	-	-	-	-	-	-	3.04	<1	2.88	<1	<1	3.79	<1	<1	4.59	-	-	-	-	-	-	**1081**
1149	2	3	1	4.18	4.18	4.9	-	-	-	-	-	-	3.48	<1	3.08	-	-	-	3.32	<1	3.23	-	-	-	2.9	<1	3.23	<1	<1	3.4	<1	<1	4.56	-	-	-	-	-	-	**1149**
1254	3	2	1	4.06	4.32	4.85	-	-	-	-	-	-	-	-	-	3.35	<1	3.09	3.35	<1	3.07	3.32	<1	3.2	3.32	<1	3.22	<2	<2	3.4	-	-	-	3.91	**4.08**	<2	-	-	-	**1254**
1594	1	3	2	4.11	4.38	4.85	-	-	-	-	-	-	3.45	<1	2.95	3.36	<1	2.59	3.48	<1	2.85	3.58	<1	3.2	3.46	<1	3.2	<2	<2	3.63	<2	<2	4.65	4.08	**4.26**	<2	-	-	-	**1594**
1970	1	2	3	4.11	4.3	4.79	4.11	4.3	4.74	-	-	-	3.46	<1	3.2	3.38	<1	3.2	3.46	<1	3.18	3.46	<1	3.2	3.37	<1	3.18	<2	<2	3.76	<2	<2	4.72	3.99	<2	<2	-	-	-	**1970**
2035	2	3	1	4	4.3	4.9	-	-	-	-	-	-	3.4	<1	3	-	-	-	-	-	-	-	-	-	3.2	<1	**<1**	<1	<1	3.6	<2	<2	4.7	-	-	-	-	-	-	**2035**
2058	2	1	3	4.07	4.32	4.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.06	<1	3.15	<2	<2	3.56	-	-	-	-	-	-	-	-	-	**2058**
2072	2	1	3	**4.87**	4.2	4.64	**4.83**	4.2	4.52	-	-	-	2.96	0	2.87	3	0	2.89	3	0	2.99	3.06	0	3	2.84	0	2.91	0	0	3.2	0	-	4.54	-	-	-	-	-	-	**2072**
2324	2	3	1	3.91	4.55	4.82	-	-	-	-	-	-	3.29	0	2.81	-	-	-	-	-	-	-	-	-	2.94	0	2.78	0	0	3.55	0	0	4.73	3.79	0	0	-	-	-	**2324**
2350	3	1	2	-	-	-	-	-	-	3.81	**<2**	3.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	4.75	-	-	-	-	-	-	-	-	**2350**
2386	1	2	3	4	3.89	4.89	-	-	-	-	-	-	-	-	-	3.13	<1	**<1**	3.54	<1	3.16	3.3	<1	3.1	3.12	<1	3.23	<2	<2	3.48	<2	<2	4.64	-	-	-	-	-	-	**2386**
2402	1	2	3	4.03	4.66	4.88	-	-	-	-	-	-	3.56	<1	3.15	-	-	-	3.53	<1	2.95	-	-	-	3.18	<1	2.95	-	-	-	-	-	-	-	-	-	-	-	-	**2402**
2459	1	2	3	3.98	3.89	4.68	3.94	3.84	4.72	-	-	-	-	-	-	-	-	-	3.42	<1	3.23	-	-	-	3.28	<1	3.16	<1	<1	3.52	<1	<1	4.64	-	-	-	-	-	-	**2459**
2505	2	3	1	3.98	4.2	4.87	-	-	-	-	-	-	3.28	<1	3.08	3.25	<1	3.04	3.3	<1	3.04	-	-	-	3.04	<1	2.86	-	-	-	-	-	-	-	-	-	-	-	-	**2505**
2553	1	3	2	3.97	4.2	4.87	-	-	-	-	-	-	-	<1	-	-	-	-	3.05	<1	2.55	-	-	-	-	-	-	-	-	-	<2	<2	4.59	-	-	-	-	-	-	**2553**
2637	1	2	3	4.04	4.32	4.78	-	-	-	3.39	3.81	4.81	3.43	<1	3.23	-	-	-	3.41	<1	3.17	3.38	<1	3	3.38	<1	2.95	<1	<1	3.59	<1	<1	4.65	-	-	-	-	-	-	**2637**
2659	2	1	3	4.3	3.95	4.61	-	-	-	-	-	-	-	-	-	-	-	-	3.52	<1	**4.02**	-	-	-	3.08	<1	2.7	-	-	-	<1	<1	4.56	-	-	-	-	-	-	**2659**
2670	2	1	3	4.05	**6.45**	4.96	-	-	-	-	-	-	-	-	-	-	-	-	3.04	0	3.04	3.04	0	**2.4**	**0**	0	**0**	-	-	-	0	0	4.5	-	-	-	-	-	-	**2670**
2704	3	1	2	4.14	3.85	4.84	-	-	-	-	-	-	3.54	<1	3.11	-	-	-	3.57	<1	3.11	-	-	-	3.04	<1	3.11	<2	<2	3.4	<2	<2	4.51	-	-	-	-	-	-	**2704**
2720	3	1	2	4.03	4.38	4.85	-	-	-	-	-	-	3.4	<1	3.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**2720**
2745	2	3	1	4.05	4.34	4.78	4.05	4.33	4.83	-	-	-	3.43	<1	3.17	-	-	-	-	-	-	3.38	<1	3.2	3.15	<1	3.17	<2	<2	3.81	<2	<2	4.86	3.93	<2	<2	-	-	-	**2745**
2757	3	1	2	4.08	3.91	4.85	4.08	3.76	4.75	-	-	-	3.38	<1	3.15	3.4	<1	3.18	-	-	-	-	-	-	-	-	-	<2	<2	3.46	-	-	-	-	-	-	-	-	-	**2757**
2764	1	2	3	3.93	3.87	4.81	-	-	-	-	-	-	3.6	<1	3.04	-	-	-	3.3	<0,60	2.93	-	-	-	-	-	-	<2	<2	3.54	-	-	-	3.9	<2	<2	-	-	-	**2764**
2842	3	1	2	**4.93**	3.83	4.65	-	-	-	-	-	-	3.2	0	2.95	3.32	0	3	-	-	-	3.2	0	3	3.11	0	2.97	-	-	-	-	-	-	-	-	-	-	-	-	**2842**
2920	1	2	3	3.99	4.34	4.99	-	-	-	-	-	-	3.3	<1	3.16	-	-	-	-	-	-	-	-	-	3.21	<1	3.06	-	-	-	-	-	-	-	-	-	-	-	-	**2920**
2941	3	1	2	4	4.52	4.84	-	-	-	-	-	-	3.3	-	2.98	3.42	-	2.99	-	-	-	3.1	-	3.1	-	-	-	-	-	3.31	-	-	4.7	3.98	-	-	-	-	-	**2941**
3055	3	2	1	4.04	4.14	4.74	-	-	-	-	-	-	3.4	<1	3.01	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.4	-	-	-	-	-	-	Pos	Neg	Pos	**3055**
3159	3	2	1	4.01	3.92	4.85	-	-	-	-	-	-	3.45	<1	3.2	-	-	-	3.4	<1	3.15	3.28	<1	3	3.11	<1	3.11	-	-	-	<2	<2	4.62	-	-	-	-	-	-	**3159**
3225	3	1	2	3.94	4.24	4.77	-	-	-	-	-	-	3.31	<1	3.08	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.27	-	-	-	-	-	-	Pos	Neg	Pos	**3225**
3243	1	2	3	4.02	4.18	4.83	-	-	-	-	-	-	3.42	<1	2.97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3243**
3305	1	3	2	4.08	4.54	4.88	-	-	-	-	-	-	3.28	<1	3	-	-	-	-	-	-	3.43	<1	3.3	3.43	<1	3.34	<2	<2	3.79	<2	<2	**<2**	-	-	-	-	-	-	**3305**
3327	3	1	2	4.01	4.19	4.71	-	-	-	-	-	-	3.33	0	2.93	-	-	-	-	-	-	-	-	-	3.05	0	**2.35**	-	-	-	0	0	4.5	-	-	-	-	-	-	**3327**
3346	1	2	3	3.88	4.2	4.51	-	-	-	-	-	-	3.34	<1	3.1	3.31	<1	3.08	3.34	<1	3.14	3.23	<1	3.2	2.85	<1	3.15	<2	<2	3.4	<2	<2	4.36	-	-	-	-	-	-	**3346**
3452	2	3	1	3.96	4.42	**4.34**	-	-	-	-	-	-	-	-	-	3.47	0	2.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3452**
3457	1	3	2	-	-	-	4.08	3.57	4.59	-	-	-	3.36	<1	3.04	-	-	-	-	-	-	3.44	<1	3.1	-	-	-	-	-	-	<2	<2	4.43	4.04	**4.06**	<2	-	-	-	**3457**
m				4.0	4.26	4.83	4.0	4.1	4.69	3.8	3.78	4.5	3.4	0	3.0	3.3	0	3.0	3.36	0	3.03	3.36	0	3.1	3.2	0	3.1	0.0	0	3.5	0.0	0	4.6	3.9	0	0.0	pos	neg	pos	**m**
s				0.09	0.26	0.12	0.09	0.4	0.19	0.31	0.15	0.53	0.12	0	0.16	0.127	0	0.16	0.18	0	0.17	0.17	0	0.1	0.196	0	0.16	0	0	0.181	0	0	0.115	0.13	0	0	-	-	-	**s**

Lab no	Code no			Aerobic microorg. 30 °C			Aerobic microorg. 20 °C			Contaminating microorg.			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 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	
3511	3	2	1	-	-	-	4.08	4.32	4.8	-	-	-	3.41	0	3.08	-	-	-	-	-	-	3.65	0	3.1	3.1	0	**0**	-	-	-	0	0	4.47	4.11	**4.28**	0	-	-	-	3511
3533	2	3	1	4.09	4.73	5.07	-	-	-	-	-	-	-	-	-	-	-	-	>3,04	<1	3.04	>3,04	<1	3	3.04	<1	3.04	-	-	-	<1	<1	**3.87**	-	-	-	-	-	-	3533
3543	2	1	3	4	4.29	4.76	-	-	-	-	-	-	**<2**	<2	2.85	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	3.2	<2	**3.7**	4.36	3.96	**4.25**	<2	-	-	-	3543
3587	3	1	2	3.99	4.27	4.72	-	-	-	-	-	-	3.43	<1	2.86	3.31	<1	2.8	3.35	<1	3.02	-	-	-	2.85	<1	3	<1	<1	3.41	-	-	-	3.85	<1	<1	-	-	-	3587
3588	2	3	1	3.98	4.24	4.85	-	-	-	-	-	-	3.25	<1	2.99	3.34	<1	2.99	3.3	<1	2.98	3.41	<1	3.2	3.18	<1	3.23	<2	<2	3.48	<2	<2	4.68	3.92	<2	<2	-	-	-	3588
3626	2	3	1	4.04	4.32	4.97	-	-	-	-	-	-	3.34	<1	3.08	3.3	<1	3.08	3.36	<1	3.15	3.38	<1	3.2	3.38	<1	3.18	<2	<2	3.7	<2	<2	4.7	4.1	<2	<2	-	-	-	3626
3652	1	2	3	3.74	3.77	4.78	-	-	-	-	-	-	-	-	-	-	-	-	2.87	0	2.81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3652
3831	2	1	3	3.84	4.17	4.72	3.88	4.08	4.68	-	-	-	-	-	-	-	-	-	3.25	0	2.91	-	-	-	3.03	0	2.91	-	-	-	-	-	-	-	-	-	-	-	-	3831
3925	3	2	1	4.01	4.32	4.91	-	-	-	-	-	-	-	-	-	-	-	-	**2.4**	<1	**1.7**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3925
4047	2	1	3	4.08	4.11	4.96	-	-	-	-	-	-	3.52	<1	3.15	-	-	-	-	-	-	-	-	-	3.27	<1	3.24	<1	<1	3.62	<1	<1	4.67	-	-	-	-	-	-	4047
4050	2	3	1	3.95	4.37	4.79	-	-	-	3.46	3.72	4.48	3.3	<1	3.06	3.23	<1	2.76	-	-	-	-	-	-	-	-	-	<1	<1	3.4	-	-	-	-	-	-	Pos	Neg	**Neg**	4050
4064	2	1	3	3.88	4.17	4.74	-	-	-	-	-	-	3.27	<1	2.98	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4064
4100	2	3	1	4.04	4.28	4.86	-	-	-	-	-	-	3.2	<1	2.94	-	-	-	3.28	<1	2.98	-	-	-	2.57	<1	2.7	<1	<1	3.59	<1	<1	4.59	4.04	**4.11**	<1	-	-	-	4100
4153	3	1	2	4.01	4.31	4.83	-	-	-	-	-	-	3.32	<1	3.03	3.2	<1	2.82	3.41	<1	2.94	3.38	<1	3.2	3.38	<1	3.15	<2	<2	3.82	<2	<2	4.63	3.89	**4.23**	<2	-	-	-	4153
4171	1	2	3	4.11	4.35	4.94	-	-	-	-	-	-	3.4	<1	3	-	-	-	3.45	<0,60	3.08	-	-	-	-	-	-	<2	<2	3.68	-	-	-	3.78	<3	<3	-	-	-	4171
4246	2	1	3	3.97	4.25	4.79	-	-	-	-	-	-	3.24	<1	2.99	-	-	-	-	-	-	-	-	-	2.99	<1	3.03	-	-	-	**2.3**	<2	4.53	-	-	-	-	-	-	4246
4266	3	2	1	**5.02**	4.91	4.78	-	-	-	-	-	-	-	-	-	-	-	-	3.42	<1	3.18	-	-	-	3.2	<1	3.2	-	-	-	<1	<1	4.7	-	-	-	-	-	-	4266
4278	1	3	2	3.92	4.14	4.67	-	-	-	-	-	-	3.22	<	3.03	-	-	-	-	-	-	-	-	-	-	-	-	<	<	3.65	-	-	-	-	-	-	-	-	-	4278
4288	3	1	2	3.9	4.38	4.82	-	-	-	3.92	3.78	4.69	3.34	<1	2.86	-	-	-	3.29	<1	2.81	3.34	<1	3	3.15	<1	3.19	<2	<2	3.72	<2	<2	4.67	3.84	<2	<2	-	-	-	4288
4305	1	2	3	4.1	4.35	4.85	-	-	-	-	-	-	3.28	<1	3.03	3.33	<1	2.97	3.36	<1	2.98	-	-	-	2.98	<1	2.95	<2	<2	3.61	<2	<2	**4.09**	-	-	-	-	-	-	4305
4339	1	3	2	4.1	4.38	4.89	-	-	-	3.2	3.75	4.73	3.45	<1	3.2	3.4	<1	3.26	3.48	<1	3.2	3.52	<1	3.3	3.42	<1	3.28	<2	<2	3.34	<2	<2	4.63	4	<2	<2	-	-	-	4339
4352	2	3	1	-	-	-	-	-	-	-	3.58	4.72	3.28	0	2.89	3.32	0	2.93	3.42	0	3.11	3.6	0	3	3.15	0	3.08	0	0	3.4	**2.8**	0	4.51	3.81	**4.08**	0	-	-	-	4352
4400	2	3	1	4.28	4.56	4.97	-	-	-	-	-	-	3.62	<2	3.39	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	3.9	-	-	-	-	-	-	-	-	-	4400
4562	1	2	3	4.11	4.34	**4.45**	-	-	-	-	-	-	3.42	<1	2.94	-	-	-	3.57	<1	3.08	-	-	-	3.18	<1	2.91	<1	<1	3.11	<1	<1	4.49	3.85	<1,30	<1,30	-	-	-	4562
4633	2	1	3	3.99	4.44	4.79	-	-	-	-	-	-	3.36	<1	2.52	3.37	<1	2.88	3.5	<1	2.74	3.35	<1	3.2	3.05	<1	3.21	<2	<2	**2.4**	<2	<2	4.52	3.78	**4.3**	<2	-	-	-	4633
4635	1	3	2	3.98	3.84	5.01	-	-	-	-	-	-	3.38	<1	3.1	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	**4.31**	<1	**3.8**	4.21	3.95	<1	<1	-	-	-	4635
4664	2	1	3	4.04	4	4.58	3.98	3.63	4.67	-	-	-	3.36	<1	3.07	-	-	-	3.38	<1	3.06	3.32	<1	3	-	<1,30	3.2	-	-	-	<2	<2	**<2**	3.84	<2	<2	-	-	-	4664
4889	1	2	3	4.11	4.54	4.86	4	3.7	4.8	-	-	-	3.28	0	3.04	-	-	-	3.49	0	3.08	3.38	0	3.1	3.49	0	3.08	0	0	3.64	0	0	4.61	3.91	0	0	-	-	-	4889
4951	3	2	1	**3.18**	4.18	4.75	-	-	-	-	-	-	3.07	<1	2.54	-	-	-	2.84	<1	**<1**	-	-	-	3.22	<1	2.97	-	-	-	-	-	-	3.53	**3.67**	<1	-	-	-	4951
4955	2	1	3	4.04	3.98	4.83	-	-	-	-	-	-	3.46	<1	3.1	-	-	-	3.43	<1	3.07	3.2	<1	3	2.95	<1	3.1	<2	<2	3.64	<2	<2	4.58	-	-	-	-	-	-	4955
4980	2	3	1	4.12	3.96	4.9	-	-	-	-	-	-	3.53	<1	3.18	-	-	-	3.48	<1	3.08	-	-	-	2.95	<1	3.12	<2	<2	3.4	<2	<2	4.6	-	-	-	-	-	-	4980
5018	1	2	3	4.03	4.31	4.89	-	-	-	-	-	-	3.19	<1	2.96	3.28	<1	2.96	3.4	<1	3.32	3.15	<1	3	3.15	<1	3	<1	<1	3.56	<1	<1	4.65	3.92	<1	<1	-	-	-	5018
5100	2	1	3	4.09	**<1**	5.01	-	-	-	-	-	-	-	-	-	-	-	-	3.48	<1	2.96	-	-	-	**<1**	<1	2.96	-	-	-	-	-	-	-	-	-	-	-	-	5100
5119	2	3	1	3.95	3.52	4.91	-	-	-	-	-	-	-	-	-	3.36	<1	3.2	-	-	-	-	-	-	3.41	<1	3.34	-	-	-	-	-	-	-	-	-	-	-	-	5119
5162	3	1	2	4.21	4.3	5.22	-	-	-	-	-	-	-	-	-	-	-	-	3.62	<1	2.68	-	-	-	3.13	<1	3.18	<1	<1	3.87	-	-	-	4.15	<1	<1	-	-	-	5162
5197	3	1	2	4.02	3.99	4.6	-	-	-	-	-	-	3.41	<1	3.01	-	-	-	-	-	-	-	-	-	3.48	<1	3.2	-	-	-	<1	<1	4.63	3.98	<1	<1	-	-	-	5197
5201	1	2	3	4.19	4.03	4.98	-	-	-	-	-	-	3.3	<1	3.12	-	-	-	-	-	-	-	-	-	2.93	<1	3.13	<2	<2	**<2**	<2	<2	4.61	-	-	-	-	-	-	5201
5204	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5204
5220	2	3	1	3.96	4.34	4.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.07	0	2.91	-	-	-	-	-	-	-	-	-	-	-	-	5220
5221	3	1	2	3.96	4.34	4.79	-	-	-	3.96	4.11	4.77	3.3	<1	3.08	-	-	-	3.72	<1	3.08	-	-	-	2.99	<1	3.04	<2	<2	3.48	-	-	-	-	-	-	-	-	-	5221
5250	3	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.93	<1	**2.35**	-	-	-	2.64	<1	**<1**	-	-	-	-	-	-	-	-	-	-	-	-	5250
5290	1	3	2	3.87	3.9	4.89	-	-	-	-	-	-	3.34	<1	3.14	3.2	<1	2.45	3.18	<1	-	-	-	-	2.89	<1	**1.85**	<2	<2	**2**	<2	<2	4.45	-	-	-	-	-	-	5290
5304	3	2	1	3.98	4.26	4.89	-	-	-	-	-	-	-	-	-	-	-	-	3.4	<1	2.95	-	-	-	3.08	<1	3.23	-	-	-	-	-	-	-	-	-	-	-	-	5304
5329	2	3	1	4.07	4.41	4.91	4.08	4.38	4.92	-	-	-	3.46	<1	3.18	-	-	-	-	-	-	3.2	<1	2.8	-	-	-	<1	<1	3.48	<1	<1	4.67	3.88	<1	<1	-	-	-	5329
m				4.0	4.26	4.83	4.0	4.1	4.69	3.8	3.78	4.5	3.4	0	3.0	3.3	0	3.0	3.36	0	3.03	3.36	0	3.1	3.2	0	3.1	0.0	0	3.5	0.0	0	4.6	3.9	0	0.0	pos	neg	pos	**m**
s				0.09	0.26	0.12	0.09	0.4	0.19	0.31	0.15	0.53	0.12	0	0.16	0.127	0	0.16	0.18	0	0.17	0.17	0	0.1	0.196	0	0.16	0	0	0.181	0	0	0.115	0.13	0	0	-	-	-	**s**

Lab no	Code no			Aerobic microorg. 30 °C			Aerobic microorg. 20 °C			Contaminating microorg.			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 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	
5333	1	2	3	4.09	4.28	4.8	-	-	-	-	-	-	3.19	<1	3.07	3.18	<1	3.02	-	-	-	-	-	-	3.13	<1	3.16	<2	<2	3.36	<2	<2	4.61	3.98	<2	<2	-	-	-	5333
5338	2	3	1	4.16	4.4	4.9	-	-	-	-	-	-	-	-	-	3.58	<1	3.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5338
5350	2	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5350
5352	3	1	2	4.06	4.33	4.93	-	-	-	-	-	-	3.51	<1	3.23	-	-	-	3.36	<1	3	3.39	<1	3	3.3	<1	2.97	<2	<2	3.73	<2	<2	4.6	3.86	<2	<2	-	-	-	5352
5380	3	1	2	3.99	3.9	4.58	-	-	-	-	-	-	3.22	<1	2.93	-	-	-	-	-	-	-	-	-	3.01	<1	**2.18**	<1	<2	3.89	<1	<2	4.7	-	-	-	-	-	-	5380
5419	1	3	2	3.96	4.25	4.89	-	-	-	3.97	3.77	4.74	3.29	<1	3.14	-	-	-	-	-	-	-	-	-	3.02	<1	2.86	<1	<1	3.51	<1	<1	4.56	3.83	**4.17**	<1	-	-	-	5419
5446	1	2	3	3.98	4.36	4.83	-	-	-	-	-	-	3.41	<1	3.24	3.34	<1	3.24	3.3	<1	3.2	-	-	-	3.17	<1	3.2	<1	<1	3.26	<1	<1	4.59	-	-	-	-	-	-	5446
5494	2	3	1	4.04	4.3	4.87	-	-	-	3.94	3.76	4.84	3.46	0	2.95	3.46	0	2.92	3.4	0	2.88	-	-	-	-	-	-	0	0	3.15	-	-	-	-	-	-	-	-	-	5494
5545	3	2	1	3.85	4.22	4.8	-	-	-	4.08	3.91	4.86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.49	<1	<1	4.66	4.27	<1	<1	-	-	-	5545
5553	2	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.95	<1	2.6	-	-	-	-	-	-	-	-	-	<1	<1	4.64	**4.65**	<1	<1	-	-	-	5553
5615	3	2	1	4.08	4	4.86	-	-	-	-	-	-	3.41	<1	3.08	-	-	-	3.36	<1	3.15	-	-	-	3.04	<1	3.18	<1	<1	3.81	<2	<2	4.74	3.97	<2	<2	-	-	-	5615
5632	2	1	3	4	4.7	4.6	-	-	-	-	-	-	3.35	<1	3	-	-	-	-	-	-	-	-	-	3.1	<1	3	<2	-	-	<2	-	4.55	-	-	-	-	-	-	5632
5701	2	3	1	4.02	4.34	4.78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5701
5801	2	3	1	3.77	4.32	4.66	-	-	-	-	-	-	3.44	<1	3.04	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	3.49	-	-	-	-	-	-	-	-	-	5801
5883	2	3	1	3.98	4.28	4.7	-	-	-	-	-	-	3.41	<1	2.85	-	-	-	-	-	-	-	-	-	3.18	<1	2.63	<2	<2	3.43	<2	<2	4.58	-	-	-	-	-	-	5883
5993	1	2	3	-	-	-	-	-	-	-	-	-	**2.88**	0	2.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5993
6109	2	3	1	4.28	4.28	4.83	-	-	-	-	-	-	-	-	-	-	-	-	3.38	<0,6	2.84	-	-	-	3.04	<0,6	2.81	<2	<2	3.65	-	-	-	-	-	-	-	-	-	6109
6175	1	2	3	4.17	5.02	5.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6175
6224	3	1	2	4.21	4.39	4.92	-	-	-	-	-	-	3.52	<1	3.23	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.53	-	-	-	-	-	-	-	-	-	6224
6232	1	2	3	4.02	4.31	4.91	-	-	-	-	-	-	**2.75**	<1	2.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6232
6253	3	2	1	4.04	4.34	4.81	-	-	-	-	-	-	3.52	<1	3.08	3.4	<1	2.98	-	-	-	-	-	-	3.11	<1	3.04	<1	<1	3.86	<1	<1	4.62	4	<1	<1	-	-	-	6253
6258	2	1	3	4.01	3.88	4.68	-	-	-	-	-	-	3.46	-	3.11	-	-	-	3.39	-	3.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6258
6343	1	3	2	4.08	4.41	4.72	-	-	-	-	-	-	-	-	-	-	-	-	3.56	<1	3.04	-	-	-	3.26	<1	3.04	<2	<2	3.32	<2	<2	4.28	-	-	-	-	-	-	6343
6352	1	3	2	4	4.4	4.8	-	-	-	-	-	-	3.26	<1	2.95	-	-	-	3.35	<1	2.75	-	-	-	3.55	<1	3.15	<2	<2	3.4	<2	<2	4.6	3.6	**4.05**	<2	-	-	-	6352
6368	2	1	3	4	4.24	4.8	4	4.18	4.71	-	-	-	3.28	<1	3.13	-	-	-	3.18	<1	3.1	3.37	<1	3.3	3.37	<1	3.26	-	-	-	<2	<2	4.65	4	**4.15**	<2	-	-	-	6368
6380	2	3	1	3.96	4.15	**4.29**	3.75	4.22	4.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	<1	**2.09**	-	-	-	-	-	-	-	-	-	-	-	-	6380
6456	1	3	2	3.96	4.35	4.88	-	-	-	-	-	-	3.3	<1	2.91	3.36	<1	2.83	3.3	<1	2.89	3.24	<1	2.9	3.19	<1	2.93	<1	<1	3.48	<1	<1	4.68	3.92	<1	<1	-	-	-	6456
6490	1	3	2	4.07	4.35	4.73	-	-	-	-	-	-	3.38	<1	3.17	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	3.45	<2	<2	4.67	4.02	<2	<2	-	-	-	6490
6594	3	2	1	4.04	4.3	4.88	-	-	-	-	-	-	3.34	<1	2.86	-	-	-	3.9	<0,60	2.88	-	-	-	-	-	-	<2	<2	3.45	-	-	-	-	-	-	-	-	-	6594
6628	1	2	3	3.94	4.23	4.64	-	-	-	-	-	-	-	-	-	2.96	0	2.91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6628
6647	3	1	2	4.02	4.31	4.94	-	-	-	-	-	-	-	-	-	-	-	-	>3,04	<0,47	>3,04	-	-	-	>3,04	<0,47	>3,04	-	-	-	-	-	-	-	-	-	-	-	-	6647
6658	2	1	3	4.3	4.57	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.23	-	-	-	-	-	-	-	-	-	6658
6707	1	3	2	4.18	3.85	5	4.26	3.73	5	3.08	3.4	4.43	3.41	<1	3.3	3.28	<1	3.04	3.38	<1	3.2	3.32	<1	3.2	3.08	<1	3.18	<2	<2	3.45	<2	-	4.78	4.11	<2	<2	-	-	-	6707
6730	1	3	2	4.04	3.88	4.63	-	-	-	-	-	-	-	-	-	-	-	-	3.28	<1	3.08	-	-	-	3.02	<1	3.08	<2	<2	3.7	<2	**3.7**	4.41	-	-	-	-	-	-	6730
6762	2	1	3	4.07	3.95	4.94	-	-	-	-	-	-	3.5	<1	3.1	-	-	-	-	-	-	-	-	-	3.36	<1	3.1	-	-	-	-	-	-	-	-	-	-	-	-	6762
6852	3	2	1	4.08	4.79	4.82	-	-	-	-	-	-	3.22	<1	2.71	-	-	-	3.7	<1	3.3	3.7	<1	3.3	-	<1	3.3	-	-	-	<1	<1	4.71	-	-	-	-	-	-	6852
6885	3	2	1	4.18	3.88	4.9	-	-	-	-	-	-	3.35	<1	3.11	3.37	<1	3.03	-	-	-	-	-	-	-	-	-	<2	<2	3.69	<2	<2	4.63	3.98	**4.22**	<2	Pos	Neg	Pos	6885
6944	3	1	2	-	-	-	3.88	4.09	4.52	-	-	-	-	-	-	-	-	-	3.36	0	3.2	3.33	0	3.2	3.14	0	**0**	0	0	3.64	0	0	4.65	3.92	0	0	-	-	-	6944
6958	2	1	3	3.92	4.23	4.63	-	-	-	-	-	-	3.32	0	3	-	-	-	-	-	-	-	-	-	-	-	-	**3.4**	**3.7**	3.23	-	-	-	-	-	-	-	-	-	6958
6971	1	3	2	4.03	3.99	4.81	-	-	-	-	-	-	3.55	0	2.99	-	-	-	-	-	-	-	-	-	-	-	-	0	0	3.3	-	-	-	-	-	-	-	-	-	6971
7024	1	2	3	4.18	4.47	4.95	-	-	-	-	-	-	3.57	<1	3.09	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.38	-	-	-	-	-	-	-	-	-	7024
7096	3	2	1	4.03	3.96	5.09	-	-	-	-	-	-	3.51	<1	2.86	-	-	-	3.22	<1	3.12	3.04	<0,47	3	3.09	<1	3.08	-	-	-	<2	<2	4.74	3.87	**4.31**	<2	-	-	-	7096
7182	1	3	2	4.1	4.2	4.77	4.04	3.92	4.75	4.17	3.94	4.74	3.47	<1	3.09	3.32	<1	2.85	3.31	<1	2.97	-	-	-	3	<1	2.97	-	-	-	-	-	-	-	-	-	-	-	-	7182
7191	1	3	2	**4.94**	5.2	**5.89**	**4.92**	5.28	**5.8**	-	-	-	-	-	-	3.04	0	3.04	3.04	0	3.04	3.04	0	3	3.04	0	3.04	-	-	-	0	0	4.36	-	-	-	-	-	-	7191
7207	1	3	2	3.98	4.13	5.03	-	-	-	-	-	-	3.29	<1	2.56	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.77	-	-	-	3.84	**4.09**	<1	-	-	-	7207
m				4.0	4.26	4.83	4.0	4.1	4.69	3.8	3.78	4.5	3.4	0	3.0	3.3	0	3.0	3.36	0	3.03	3.36	0	3.1	3.2	0	3.1	0.0	0	3.5	0.0	0	4.6	3.9	0	0.0	pos	neg	pos	**m**
s				0.09	0.26	0.12	0.09	0.4	0.19	0.31	0.15	0.53	0.12	0	0.16	0.127	0	0.16	0.18	0	0.17	0.17	0	0.1	0.196	0	0.16	0	0	0.181	0	0	0.115	0.13	0	0	-	-	-	**s**

Lab no	Code no			Aerobic microorg. 30 °C			Aerobic microorg. 20 °C			Contaminating microorg.			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 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	
7232	3	1	2	4.03	3.87	4.87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7232
7242	2	1	3	3.95	4.34	4.85	-	-	-	-	-	-	**2.91**	0	2.79	-	-	-	-	-	-	-	-	-	-	-	-	0	0	3.6	-	-	-	-	-	-	-	-	-	7242
7248	3	2	1	4.08	4.29	4.9	-	-	-	-	-	-	3.33	<2	3.01	-	-	-	3.39	<1	3.09	3.45	<1	3.2	3.5	<1	3.2	<1	<1	3.82	<2	<2	4.82	3.86	**4.29**	<2	-	-	-	7248
7253	3	1	2	**4.43**	4.42	4.89	-	-	-	-	-	-	3.42	<1	3.19	-	-	-	3.45	<1	3.09	-	-	-	3.16	<1	2.99	<1	<1	3.56	<1	**3.8**	4.65	-	-	-	-	-	-	7253
7296	3	1	2	4.18	4.9	4.99	-	-	-	-	-	-	-	-	-	3.39	<1	2.79	3.33	<1	2.78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7296
7334	1	2	3	4	4.29	4.71	-	-	-	-	-	-	-	-	-	-	-	-	3.28	<1	**2.34**	-	-	-	>1	<1	>1	<1	<1	3.53	<1	<1	4.64	-	-	-	-	-	-	7334
7336	2	1	3	-	-	-	-	-	-	3.72	**<2**	3.23	3.28	<1	2.73	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	**4**	4.61	-	-	-	-	-	-	7336
7449	3	1	2	4.05	4.3	4.94	-	-	-	-	-	-	3.28	<1	3.08	3.38	<1	3.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7449
7543	3	1	2	4.04	3.9	4.56	4.03	3.72	4.65	-	-	-	-	-	-	3.48	<1	2.95	3.53	<1	2.97	-	-	-	3.06	<1	2.92	-	-	-	-	-	-	-	-	-	-	-	-	-	7543
7564	1	2	3	4	4.32	4.88	4.08	4.32	4.58	3.41	3.93	4.89	3.28	<1	3.04	3.52	<1	3.3	3.73	<1	3.32	3.34	<1	3.3	3.11	<1	3.3	<2	<2	3.38	<2	<2	4.67	3.99	<2	<2	-	-	-	7564
7596	2	3	1	3.98	4	4.97	3.96	3.94	4.66	-	-	-	3.38	<1	2.9	-	-	-	3.39	<1	2.8	3.17	<1	2.9	3.17	<1	2.9	<2	<2	3.3	<2	<2	4.25	-	-	-	-	-	-	7596
7627	3	1	2	4	4.62	4.87	-	-	-	-	-	-	-	-	-	-	-	-	3.87	<1	3.41	-	-	-	-	-	-	<2	<2	3.69	-	-	-	4.15	**4.14**	<2	-	-	-	7627
7688	1	2	3	4.05	4.28	4.91	3.94	4.26	4.79	-	-	-	3.25	<1	2.86	3.32	<1	2.79	3.17	<1	2.86	3.28	<1	3.1	-	-	-	-	-	-	-	-	-	3.91	**4.12**	<1	-	-	-	7688
7728	2	3	1	3.98	4.81	4.98	3.99	4.88	5.03	-	-	-	-	-	-	-	-	-	3.53	0	3.24	3.53	0	3.2	3.53	0	3.24	0	0	3.67	0	0	4.65	-	-	-	-	-	-	7728
7750	3	1	2	4.03	4.57	4.93	-	-	-	-	-	-	3.23	<1	2.79	-	-	-	3.25	<,60	2.83	-	-	-	-	-	-	<1	<1	3.78	-	-	-	-	-	-	-	-	-	7750
7825	2	3	1	4.26	4.58	4.99	-	-	-	-	-	-	3.4	0	3.19	-	-	-	-	-	-	-	-	-	3.24	0	3.22	-	-	-	0	**3.7**	4.58	**0**	0	0	-	-	-	7825
7876	3	1	2	4.11	4.48	5.04	-	-	-	-	-	-	3.24	<1,3	3.06	-	-	-	-	-	-	-	-	-	3.37	<1	3.29	<2	<2	3.55	<2	<2	4.65	4.18	**4.17**	<2	-	-	-	7876
7877	2	3	1	3.96	3.87	4.82	-	-	-	-	-	-	3.4	0	3.2	-	-	-	-	-	-	-	-	-	-	-	-	**3.95**	0	3.43	-	-	-	-	-	-	-	-	-	7877
7906	3	2	1	4.05	4.33	4.68	-	-	-	3.9	3.89	4.44	3.32	<1	3	-	-	-	3.37	<1	3.17	-	-	-	3.07	<1	**<1**	<2	<2	3.2	<2	**3.8**	4.6	-	-	-	-	-	-	7906
7930	1	2	3	4.04	4.39	4.93	-	-	-	-	-	-	3.34	<1	3.01	3.46	<1	3.26	3.46	<1	3.26	3.45	<1	3.1	3.45	<1	3.08	<2	<2	3.7	<2	<2	4.6	3.95	**4.3**	<2	-	-	-	7930
7940	3	1	2	4.06	4.63	4.87	-	-	-	-	-	-	-	-	-	3.48	<1	3.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7940
7946	1	3	2	4.17	4.74	4.58	4.16	4.44	4.32	4.06	**4.56**	4.67	3.36	0	3.12	3.34	0	3.17	3.39	0	3.17	3.23	0	3.2	3.09	0	3.14	0	0	3.35	0	0	4.68	**4.5**	0	0	Pos	Neg	Pos	7946
7962	3	2	1	4.04	4.36	4.72	-	-	-	-	-	-	3.46	<1	3.01	3.23	<1	2.95	3.26	<1	3	3.26	<1	3.2	3.26	<1	3.2	<2	<2	3.4	<2	<2	4.48	3.85	<2	<2	-	-	-	7962
7984	2	1	3	4.04	3.9	4.76	-	-	-	-	-	-	3.36	<1	3.3	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	3.43	-	-	-	-	-	-	Pos	Neg	Pos	7984
8066	1	3	2	-	-	-	4.01	3.65	4.69	-	-	-	**0**	0	3.1	-	-	-	3.48	0	3.19	3.33	0	3.2	3.23	0	3.22	-	-	-	0	0	4.65	3.91	**4.16**	0	-	-	-	8066
8068	3	2	1	3.94	4.34	4.93	3.98	3.95	4.74	-	-	-	3.54	<1	2.93	3.34	<1	2.86	3.3	<1	2.77	3.49	<1	3.1	3.34	<1	3.11	<2	<2	3.6	<2	<2	4.57	3.8	**4.18**	<2	-	-	-	8068
8105	3	2	1	4.06	3.99	4.79	-	-	-	-	-	-	-	-	-	-	-	-	3.36	<1	3.16	-	-	-	3.17	<1	3.12	-	-	-	<1	<1	4.61	-	-	-	-	-	-	8105
8213	1	2	3	4.08	3.78	4.67	-	-	-	-	-	-	3.41	<1	3.27	-	-	-	-	-	-	-	-	-	3.18	<1	3.23	<2	<2	3.6	-	-	-	-	-	-	Pos	Neg	Pos	8213
8228	3	1	2	**2**	4.28	4.81	**<2**	3.34	**3.4**	-	-	-	-	-	-	3.2	<1	2.9	-	-	-	-	-	-	-	-	-	<2	<2	3.3	-	-	-	-	-	-	-	-	-	8228
8255	2	3	1	4.08	4.32	4.99	-	-	-	-	-	-	3.56	<1	3	3.51	<1	2.91	3.59	<1	2.99	3.52	<1	3.3	3.23	<1	3.32	<2	<2	3.41	<2	<2	4.69	3.77	**4.15**	<2	-	-	-	8255
8260	3	1	2	4.13	4.15	4.88	-	-	-	-	-	-	3.27	<1	2.74	3.29	<1	3.2	3.1	<1	3.08	**4.35**	<1	3.1	3.13	<1	3.07	<1	<1	3.48	<1	<1	4.82	**4.88**	<1	<1	-	-	-	8260
8313	2	1	3	4.11	3.86	4.8	-	-	-	-	-	-	3.3	<1	2.55	-	-	-	-	-	-	-	-	-	2.93	<1	2.98	<2	<2	3.41	<2	<2	4.68	3.9	**4.14**	<2	-	-	-	8313
8333	1	3	2	4.16	4.32	4.88	-	-	-	-	-	-	3.3	<1	2.9	-	-	-	3.32	<0,60	2.9	-	-	-	-	-	-	<2	<2	3.62	-	-	-	3.98	**4.26**	<2	-	-	-	8333
8352	2	3	1	4.04	3.89	4.92	-	-	-	-	-	-	**2.64**	<1	**4.11**	**4.28**	<1	**3.89**	**4.34**	<1	**4**	-	-	-	**4.08**	<1	**4.11**	<1	<1	3.61	<1	<1	**3.67**	3.83	<1	<1	-	-	-	8352
8380	3	2	1	4.03	4.33	4.89	3.98	4.35	4.62	-	-	-	3.16	<1	2.97	3.36	<1	3.11	3.34	<1	3.26	3.46	<1	3.1	3.37	<1	3.11	<2	<2	3.34	<2	<2	4.59	-	-	-	-	-	-	8380
8397	2	3	1	4.06	3.85	4.83	-	-	-	-	-	-	3.28	<1	3.05	-	-	-	-	-	-	-	-	-	2.91	<1	3.09	<1	<1	3.3	<1	<1	4.56	3.91	<1	<1	-	-	-	8397
8428	3	1	2	4.07	4.42	4.88	-	-	-	4.08	**<2**	3.51	3.32	<1	3.09	3.34	<1	3.05	3.37	<1	3.11	-	-	-	3.13	<1	2.93	<2	<2	3.62	<2	<2	4.7	3.94	<2	<2	-	-	-	8428
8430	3	1	2	**4.56**	4.26	5.08	-	-	-	-	-	-	3.76	<1	3.59	-	-	-	-	-	-	-	-	-	3.57	<1	3.56	<1	<1	3.3	<1	**3.9**	**5.08**	-	-	-	-	-	-	8430
8435	2	1	3	3.98	4.38	4.85	4.03	3.94	4.62	-	-	-	3.31	<1	3.12	3.32	<1	3	3.29	<1	2.96	3.46	<1	3.2	3.46	<1	3.15	<2	<2	3.6	<2	<2	**5.08**	3.91	<2	<2	-	-	-	8435
8523	1	2	3	4.05	4.37	4.88	-	-	-	-	-	-	3.39	<1	3.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8523
8529	1	2	3	4.14	4.49	4.97	-	-	-	-	-	-	3.66	<1	3.2	-	-	-	-	-	-	3.61	<1	3.2	3.61	<1	3.13	<2	<2	3.78	<2	**3.5**	4.64	4.09	**4.4**	<2	-	-	-	8529
8568	1	3	2	3.91	4.04	4.96	-	-	-	-	-	-	3.25	<1	2.99	-	-	-	3.28	<0,60	2.96	-	-	-	-	-	-	<2	<2	3.42	-	-	-	3.8	**4**	<3	-	-	-	8568
8626	2	1	3	3.97	4.24	4.7	3.92	4.23	**3.89**	-	-	-	3.4	<1	2.86	-	-	-	3.04	<0,3	2.66	3.04	<0,3	2.7	2.66	<0,3	2.66	-	-	-	-	-	-	-	-	-	-	-	-	8626
8628	3	1	2	4.06	4.37	4.85	3.99	3.74	4.88	-	-	-	3.36	<1	2.89	3.29	<1	2.91	3.23	<1	2.79	3.37	<1	3.2	3.2	<1	3.19	<2	<2	3.87	<2	<2	4.4	3.94	**3.96**	<2	-	-	-	8628
8657	1	3	2	4.08	4.58	4.77	-	-	-	-	-	-	3.59	<1	2.99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8657
m				4.0	4.26	4.83	4.0	4.1	4.69	3.8	3.78	4.5	3.4	0	3.0	3.3	0	3.0	3.36	0	3.03	3.36	0	3.1	3.2	0	3.1	0.0	0	3.5	0.0	0	4.6	3.9	0	0.0	pos	neg	pos	**m**
s				0.09	0.26	0.12	0.09	0.4	0.19	0.31	0.15	0.53	0.12	0	0.16	0.127	0	0.16	0.18	0	0.17	0.17	0	0.1	0.196	0	0.16	0	0	0.181	0	0	0.115	0.13	0	0	-	-	-	**s**

Lab no	Code no			Aerobic microorg. 30 °C			Aerobic microorg. 20 °C			Contaminating microorg.			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 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	
8734	1	2	3	3.95	4.2	4.92	-	-	-	-	-	-	3	0	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8734
8742	1	3	2	3.94	4.15	4.79	-	-	-	-	-	-	**<1**	**3.2**	**3.97**	-	-	-	**2.04**	<1	**2.04**	-	-	-	**2.04**	<1	**2.04**	-	-	-	<1	<1	4.6	-	-	-	-	-	-	8742
8756	1	3	2	4.07	3.88	4.62	-	-	-	-	-	-	3.51	<1	3.12	-	-	-	-	-	-	-	-	-	3.13	<1	2.96	<2	<2	3.24	**2.9**	**3.8**	4.37	-	-	-	-	-	-	8756
8766	3	2	1	4.1	4.3	4.9	-	-	-	-	-	-	3.3	<1,3	3.1	-	-	-	-	-	-	-	-	-	3.5	<1	3.1	<2	<2	3.6	<2	<2	4.7	4.2	**4.2**	<2	-	-	-	8766
8891	3	2	1	4.03	4.37	4.87	-	-	-	3.68	3.72	4.92	3.36	<1	3.16	3.28	<1	3.03	-	-	-	-	-	-	3.27	<1	3.23	<1	<1	-	<1	<1	4.72	-	-	-	-	-	-	8891
8909	3	2	1	4.01	4.32	4.88	-	-	-	-	-	-	3.37	<1	3.08	3.36	<1	3.31	-	-	-	-	-	-	3.27	<1	2.96	<2	<2	3.52	<2	<2	4.64	3.9	<2	<2	-	-	-	8909
8918	3	1	2	4.1	4.26	4.8	-	-	-	4	3.69	4.68	-	-	-	-	-	-	3.34	<1	3.2	-	-	-	3.2	<1	3.02	<2	<2	3.38	<1	<1	4.62	-	-	-	-	-	-	8918
8961	1	3	2	4.08	4.78	**5.41**	-	-	-	-	-	-	3.49	<1	2.85	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	3.15	-	-	-	-	-	-	-	-	-	8961
9002	2	1	3	4.06	4.39	4.96	-	-	-	-	-	-	3.5	<1	3.06	-	-	-	3.46	<1	3.09	-	-	-	3.16	<1	3.09	<2	<2	3.37	<2	<2	4.72	-	-	-	-	-	-	9002
9007	3	2	1	4.1	3.9	4.6	-	-	-	-	-	-	-	-	-	3.3	<1	3.1	-	-	-	-	-	-	3.35	<1	2.9	-	-	-	-	-	-	-	-	-	-	-	-	9007
9034	2	1	3	4	4.32	4.85	4	4.48	4.84	-	-	-	3.32	<1	2.78	-	-	-	-	-	-	-	-	-	3.22	<1	3.18	-	-	-	-	-	-	-	-	-	-	-	-	9034
9051	2	1	3	4.02	4.35	4.9	-	-	-	-	-	-	3.19	0	3.04	3.07	0	3	3.11	0	2.91	-	-	-	2.92	0	2.77	-	-	-	0	0	**3.68**	-	-	-	-	-	-	9051
9086	1	2	3	4	4.45	4.68	-	-	-	-	-	-	-	-	-	3.17	<1	2.96	-	-	-	-	-	-	>1	0	**0**	-	-	-	0	>1	>1	-	-	-	-	-	-	9086
9217	3	1	2	4	3.7	4.6	-	-	-	-	-	-	3.4	<1	3	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	3.7	<2	<2	4.5	3.9	<2	<2	-	-	-	9217
9245	2	3	1	4.04	4.26	4.85	-	-	-	-	-	-	3.36	<1	2.99	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	3.58	-	-	-	-	-	-	-	-	-	9245
9429	1	2	3	4.04	4.38	4.9	-	-	-	3.4	3.81	4.93	3.34	<1	2.86	3.26	<1	2.86	3.38	<1	3	3.26	<1	3	3.04	<1	2.95	<1	<1	3.49	<1	<1	4.52	3.92	<1	<1	-	-	-	9429
9436	3	2	1	4.04	4.13	4.74	-	-	-	-	-	-	3.12	<1	2.76	3.13	<1	2.8	3.39	<1	2.84	**2.49**	<1	3	3.03	<1	2.94	<1	<1	3.48	<1	<1	4.57	3.89	<1	<1	-	-	-	9436
9451	1	3	2	4.04	4.11	4.85	3.96	3.76	4.4	-	-	-	3.38	<1	3.11	3.32	<1	3.11	3.53	<1	3.28	3.63	<1	**3.6**	3.18	<1	3.63	<1	<1	3.43	<1	<1	4.65	3.97	**3.95**	<1	-	-	-	9451
9453	1	2	3	4.02	4.31	4.58	-	-	-	3.78	**2.54**	3.59	3.38	<1	2.96	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	**2.18**	<1	**3.7**	4.54	4.24	<1	<1	-	-	-	9453
9512	3	1	2	4.04	4.23	4.78	-	-	-	-	-	-	3.15	0	3.08	-	-	-	-	-	-	-	-	-	-	-	-	0	0	3.52	-	-	-	-	-	-	-	-	-	9512
9559	3	2	1	4	4.23	4.78	4	3.78	4.76	4	3.8	4.49	3.36	0	2.6	-	-	-	3.28	0	3.21	-	-	-	3.25	0	3.25	0	0	3.72	0	**4**	4.71	-	-	-	Pos	Neg	Pos	9559
9569	1	3	2	4.06	4.42	4.86	-	-	-	3.98	3.76	4.74	3.3	<1	2.89	3.04	<1	2.96	3.41	<1	3.08	3.34	<1	3.2	**<1**	<1	3.15	<1	<1	3.55	<1	<1	4.58	3.96	<1	<1	-	-	-	9569
9662	1	3	2	4	4.26	4.79	-	-	-	-	-	-	3.26	<1	3.15	3.26	<1	3	3.3	<1	3.04	-	-	-	3.04	<1	3.08	<2	<2	**2.3**	<2	<2	4.69	3.63	**4.08**	<2	-	-	-	9662
9747	2	1	3	4.08	4.23	4.69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	3.3	-	-	-	-	-	-	-	-	-	9747
9753	3	1	2	4.09	4.05	4.89	-	-	-	-	-	-	3.5	<1	3.23	3.48	<1	3.13	3.53	<1	3.19	3.44	<1	3.1	3.13	<1	3.19	-	-	-	<2	<2	4.73	-	-	-	-	-	-	9753
9783	2	3	1	4.07	4.3	4.88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9783
9890	2	3	1	4.1	4.42	4.83	4.06	4.3	4.56	-	-	-	3.55	0	3.13	-	-	-	3.55	0	3.07	-	-	-	3.21	0	3.07	0	0	3.51	0	0	4.55	-	-	-	-	-	-	9890
9903	1	3	2	4.05	4.34	4.9	4.09	4.39	4.83	-	-	-	3.51	0	2.9	-	-	-	-	-	-	3.65	0	3.1	3.65	0	3.14	0	0	3.59	0	0	4.66	3.94	0	0	-	-	-	9903
9923	3	1	2	3.82	4.35	4.77	-	-	-	-	-	-	3.21	<1	3.04	-	-	-	3.2	<1	3.06	-	-	-	3.04	<1	3	-	-	-	<2	<2	4.38	-	-	-	-	-	-	9923
9950	1	3	2	-	-	-	3.99	4.65	4.58	4.02	3.7	4.58	-	-	-	-	-	-	-	-	-	3.71	<1	3.2	-	-	-	<1	<1	3.43	-	-	-	3.97	**4.64**	<1	-	-	-	9950
n				186	186	186	36	36	36	23	24	24	148	147	148	63	62	63	105	106	105	59	59	60	126	131	129	128	127	127	118	114	118	78	77	77	8	8	8	**n**
Min				2	0	4.29	0	3.34	3.4	3.08	0	3.23	0	0	2.52	2.96	0	0	2.04	0	0	2.49	0	2.4	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	**Min**
Max				5.02	6.45	5.89	4.92	5.28	5.8	4.17	4.56	4.93	3.76	3.2	4.11	4.28	0	3.89	4.34	0	4.02	4.35	0	3.6	4.08	0	4.11	3.95	3.7	4.31	2.9	4	5.08	4.88	4.64	0	-	-	-	**Max**
median				4.04	4.3	4.85	4	4.14	4.71	3.92	3.77	4.7	3.36	0	3.04	3.321	0	3	3.37	0	3.07	3.37	0	3.1	3.146	0	3.11	0	0	3.51	0	0	4.62	3.92	0	0	-	-	-	**median**
m				4.0	4.26	4.83	4.0	4.1	4.69	3.8	3.78	4.5	3.4	0	3.0	3.3	0	3.0	3.36	0	3.03	3.36	0	3.1	3.2	0	3.1	0.0	0	3.5	0.0	0	4.6	3.9	0	0.0	pos	neg	pos	**m**
s				0.09	0.26	0.12	0.09	0.4	0.19	0.31	0.15	0.53	0.12	0	0.16	0.127	0	0.16	0.18	0	0.17	0.17	0	0.1	0.196	0	0.16	0	0	0.181	0	0	0.115	0.13	0	0	-	-	-	**s**
F+				0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	12	0	0	33	0	0	0	0	**F+**
F-				0	1	0	1	0	0	0	3	0	3	0	0	0	0	1	0	0	1	0	0	0	3	0	7	0	0	1	0	0	2	1	0	0	0	0	1	**F-**
<				2	0	3	0	0	2	0	1	0	4	0	0	0	0	0	2	0	4	1	0	1	1	0	5	0	0	4	0	0	4	0	0	0	-	-	-	**<**
>				6	1	2	2	0	1	0	1	0	0	0	2	1	0	1	1	0	2	1	0	1	1	0	1	0	0	1	0	0	2	3	0	0	-	-	-	**>**
< OK				3.74	3.52	4.51	3.75	3.34	4.09	3.08	3.4	3.23	2.96	0	2.52	2.96	0	2.45	2.84	0	2.55	3.04	0	2.7	2.57	0	2.63	0	0	3.11	0	0	4.21	3.53	0	0	-	-	-	**< OK**
> OK				4.3	5.2	5.22	4.26	5.28	5.03	4.17	4.11	4.93	3.76	0	3.59	3.58	0	3.31	3.9	0	3.41	3.71	0	3.3	3.65	0	3.63	0	0	3.9	0	0	4.86	4.27	0	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 - October2013***

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 z-scores. *2 < |z| ≤ 3,* *|z|>3*

Lab no	Code no	Aerobic microorg. 30 °C			Aerobic microorg. 20 °C			Contaminating microorg.			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 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	1 3 2	0.489	2.321	0.745							-0.362	0	-1.080										-0.610	0	-1.268	0	0	1.518	0	0	-0.103							1081
1149	2 3 1	1.635	-0.321	0.575							0.937	0	0.385				-0.232	0	1.177				-1.325	0	0.883	0	0	-0.642	0	0	-0.362							1149
1254	3 2 1	0.259	0.223	0.150										0.313	0	0.595	-0.068	0	0.219	-0.236	0	0.874	0.821	0	0.822	0	0	-0.642				-0.179		0				1254
1594	1 3 2	0.833	0.456	0.150							0.694	0	-0.408	0.392	0	-2.464	0.639	0	-1.098	1.288	0	0.722	1.536	0	0.699	0	0	0.632	0	0	0.417	1.122		0				1594
1970	1 2 3	0.833	0.146	-0.360	1.094	0.503	0.288				0.775	0	1.118	0.550	0	1.268	0.530	0	0.878	0.585	0	0.570	1.077	0	0.576	0	0	1.352	0	0	1.023	0.433		0				1970
2035	2 3 1	-0.429	0.146	0.575							0.288	0	-0.103										0.208	0		0	0	0.466	0	0	0.850							2035
2058	2 1 3	0.374	0.223	-0.955																			-0.507	0	0.392	0	0	0.244										2058
2072	2 1 3	4.000	-0.243	-1.636	4.000	0.250	-0.890				-3.284	0	-0.897	-2.453	0	-0.628	-1.973	0	-0.260	-1.759	0	-1.027	-1.631	0	-1.084	0	0	-1.749	0		-0.536							2072
2324	2 3 1	-1.461	1.117	-0.105							-0.605	0	-1.263										-1.120	0	-1.883	0	0	0.189	0	0	1.110	-1.097		0				2324
2350	3 1 2							0.087		-2.396																			0	0	1.283							2350
2386	1 2 3	-0.429	-1.447	0.490										-1.425	0		0.965	0	0.758	-0.353	0	-0.419	-0.201	0	0.883	0	0	-0.199	0	0	0.331							2386
2402	1 2 3	-0.085	1.544	0.405							1.587	0	0.813				0.911	0	-0.499				0.106	0	-0.838													2402
2459	1 2 3	-0.658	-1.447	-1.296	-0.792	-0.663	0.181										0.313	0	1.177				0.617	0	0.453	0	0	0.023	0	0	0.331							2459
2505	2 3 1	-0.658	-0.243	0.320							-0.686	0	0.385	-0.477	0	0.289	-0.340	0	0.040				-0.610	0	-1.391													2505
2553	1 3 2	-0.773	-0.243	0.320								0					-1.701	0	-2.893										0	0	-0.103							2553
2637	1 2 3	0.030	0.223	-0.445				-1.270	0.199	0.614	0.531	0	1.301				0.258	0	0.818	0.116	0	-1.179	1.128	0	-0.838	0	0	0.411	0	0	0.417							2637
2659	2 1 3	3.011	-1.214	-1.891													0.857	0	4.000				-0.405	0	-2.374				0	0	-0.362							2659
2670	2 1 3	0.145	4.000	1.086													-1.755	0	0.040	-1.876	0	-4.000		0					0	0	-0.882							2670
2704	3 1 2	1.177	-1.602	0.065							1.424	0	0.569				1.129	0	0.459				-0.610	0	0.146	0	0	-0.642	0	0	-0.795							2704
2720	3 1 2	-0.085	0.456	0.150							0.288	0	0.813																									2720
2745	2 3 1	0.145	0.301	-0.445	0.429	0.579	0.770				0.531	0	0.935							0.116	0	0.494	-0.048	0	0.515	0	0	1.629	0	0	2.236	-0.026		0				2745
2757	3 1 2	0.489	-1.369	0.150	0.761	-0.865	0.342				0.126	0	0.813	0.708	0	1.146										0	0	-0.309										2757
2764	1 2 3	-1.231	-1.525	-0.190							1.911	0	0.141				-0.340	0	-0.619							0	0	0.134				-0.256		0				2764
2842	3 1 2	4.000	-1.680	-1.551							-1.336	0	-0.408	0.076	0	0.045				-0.939	0	-0.799	-0.252	0	-0.715													2842
2920	1 2 3	-0.543	0.301	1.341							-0.524	0	0.874										0.259	0	-0.162													2920
2941	3 1 2	-0.429	1.000	0.065							-0.524		-0.225	0.866		-0.017				-1.524		-0.038										0.357							2941
3055	3 2 1	0.030	-0.476	-0.785							0.288	0	-0.042													0	0	-0.642							0	0	0	3055
3159	3 2 1	-0.314	-1.331	0.150							0.694	0	1.118				0.204	0	0.698	-0.470	0	-0.647	-0.252	0	0.146				0	0	0.157							3159
3225	3 1 2	-1.117	-0.088	-0.530							-0.443	0	0.385													0	0	-1.361							0	0	0	3225
3243	1 2 3	-0.199	-0.321	-0.020							0.450	0	-0.286																									3243
3305	1 3 2	0.489	1.078	0.405							-0.686	0	-0.103							0.409	0	1.787	1.383	0	1.559	0	0	1.518	0	0									3305
3327	3 1 2	-0.314	-0.282	-1.040							-0.280	0	-0.530										-0.558	0	-4.000				0	0	-0.882							3327
3346	1 2 3	-1.805	-0.243	-2.741							-0.199	0	0.508	-0.003	0	0.534	-0.123	0	0.638	-0.763	0	0.342	-1.580	0	0.392	0	0	-0.642	0	0	-2.095							3346
3452	2 3 1	-0.887	0.612	-4.000										1.261	0	-0.812																						3452
3457	1 3 2				0.761	-1.347	-0.515				-0.037	0	0.141							0.468	0	-0.191							0	0	-1.488	0.816		0				3457
3511	3 2 1				0.761	0.554	0.609				0.369	0	0.385							1.698	0	-0.191	-0.303	0					0	0	-1.142	1.351		0				3511
3533	2 3 1	0.603	1.816	2.021														0	0.040		0	-0.495	-0.610	0	-0.285				0	0	-4.000							3533
3543	2 1 3	-0.429	0.107	-0.615								0	-1.019													0	0	-1.749	0		-2.095	0.204		0				3543
3587	3 1 2	-0.543	0.029	-0.955							0.531	0	-0.958	-0.003	0	-1.179	-0.068	0	-0.080				-1.580	0	-0.530	0	0	-0.586				-0.638		0				3587
3588	2 3 1	-0.658	-0.088	0.150							-0.930	0	-0.164	0.234	0	-0.017	-0.340	0	-0.319	0.292	0	0.950	0.106	0	0.883	0	0	-0.199	0	0	0.677	-0.103		0				3588
3626	2 3 1	0.030	0.223	1.171							-0.199	0	0.385	-0.082	0	0.534	-0.014	0	0.698	0.116	0	0.570	1.128	0	0.576	0	0	1.020	0	0	0.850	1.275		0				3626
3652	1 2 3	-3.410	-1.913	-0.445													-2.680	0	-1.337																			3652
3831	2 1 3	-2.263	-0.359	-0.955	-1.457	-0.055	-0.033										-0.612	0	-0.738				-0.661	0	-1.084													3831
3925	3 2 1	-0.314	0.223	0.660													-4.000	0	-4.000																			3925
4047	2 1 3	0.489	-0.593	1.086							1.262	0	0.813										0.566	0	0.945	0	0	0.577	0	0	0.590							4047
4050	2 3 1	-1.002	0.418	-0.360				-1.044	-0.408	-0.015	-0.524	0	0.263	-0.635	0	-1.424										0	0	-0.642							0	0		4050
4064	2 1 3	-1.805	-0.359	-0.785							-0.768	0	-0.225																									4064
4100	2 3 1	0.030	0.068	0.235							-1.336	0	-0.469				-0.449	0	-0.319				-3.011	0	-2.374	0	0	0.411	0	0	-0.103	0.816		0				4100
4153	3 1 2	-0.314	0.184	-0.020							-0.362	0	0.080	-0.872	0	-1.057	0.258	0	-0.559	0.116	0	0.342	1.128	0	0.392	0	0	1.684	0	0	0.244	-0.332		0				4153
4171	1 2 3	0.833	0.340	0.916							0.288	0	-0.103				0.476	0	0.279							0	0	0.909				-1.174		0				4171
4246	2 1 3	-0.773	-0.049	-0.360							-1.011	0	-0.164										-0.865	0	-0.346				0		-0.622							4246
4266	3 2 1	4.000	2.515	-0.445													0.313	0	0.878				0.208	0	0.699				0	0	0.850							4266

Lab no	Code no	Aerobic microorg. 30 °C			Aerobic microorg. 20 °C			Contaminating microorg.			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 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	
4278	1 3 2	-1.346	-0.476	-1.381							-1.173	0	0.080													0	0	0.743										4278
4288	3 1 2	-1.575	0.456	-0.105				0.442	-0.004	0.385	-0.199	0	-0.958				-0.395	0	-1.337	-0.118	0	-0.723	-0.048	0	0.637	0	0	1.130	0	0	0.590	-0.715		0				4288
4305	1 2 3	0.718	0.340	0.150							-0.686	0	0.080	0.155	0	-0.139	-0.014	0	-0.319				-0.916	0	-0.838	0	0	0.521	0	0	-4.000							4305
4339	1 3 2	0.718	0.456	0.490				-1.884	-0.206	0.461	0.694	0	1.118	0.708	0	1.635	0.639	0	0.997	0.936	0	1.331	1.332	0	1.191	0	0	-0.974	0	0	0.244	0.510		0				4339
4352	2 3 1								-1.352	0.435	-0.694	0	-0.799	0.092	0	-0.390	0.285	0	0.483	1.417	0	-0.487	-0.068	0	-0.045	0	0	-0.653		0	-0.839	-0.975		0				4352
4400	2 3 1	2.782	1.156	1.171							2.074	0	2.278													0	0	2.127										4400
4562	1 2 3	0.833	0.301	-3.251							0.450	0	-0.469				1.129	0	0.279				0.106	0	-1.084	0	0	-2.247	0	0	-0.969	-0.638		0				4562
4633	2 1 3	-0.543	0.689	-0.360							-0.037	0	-3.033	0.471	0	-0.690	0.748	0	-1.756	-0.060	0	0.798	-0.558	0	0.760	0	0	-4.000	0	0	-0.709	-1.174		0				4633
4635	1 3 2	-0.658	-1.641	1.511							0.126	0	0.508													0	0	4.000	0		-3.394	0.127		0				4635
4664	2 1 3	0.030	-1.020	-2.146	-0.348	-1.195	-0.087				-0.037	0	0.324				0.095	0	0.159	-0.236	0	-1.179		0	0.699				0	0		-0.715		0				4664
4889	1 2 3	0.833	1.078	0.235	-0.126	-1.017	0.609				-0.686	0	0.141				0.693	0	0.279	0.116	0	-0.191	1.690	0	-0.039	0	0	0.687	0	0	0.071	-0.179		0				4889
4951	3 2 1	-4.000	-0.321	-0.700							-2.391	0	-2.911				-2.843	0					0.310	0	-0.715							-3.087		0				4951
4955	2 1 3	0.030	-1.097	-0.020							0.775	0	0.508				0.367	0	0.219	-0.939	0	-0.951	-1.069	0	0.084	0	0	0.687	0	0	-0.189							4955
4980	2 3 1	0.947	-1.175	0.575							1.343	0	0.996				0.639	0	0.279				-1.069	0	0.207	0	0	-0.642	0	0	-0.016							4980
5018	1 2 3	-0.085	0.184	0.490							-1.417	0	-0.347	-0.240	0	-0.200	0.204	0	1.716	-1.231	0	-0.799	-0.048	0	-0.530	0	0	0.244	0	0	0.417	-0.103		0				5018
5100	2 1 3	0.603		1.511													0.639	0	-0.439					0	-0.776													5100
5119	2 3 1	-1.002	-2.884	0.660										0.392	0	1.268							1.281	0	1.559													5119
5162	3 1 2	1.979	0.146	3.297													1.401	0	-2.115				-0.150	0	0.576	0	0	1.961				1.657		0				5162
5197	3 1 2	-0.186	-1.054	-1.958							0.409	0	-0.064										1.624	0	0.724				0	0	0.274	0.395		0				5197
5201	1 2 3	1.750	-0.903	1.256							-0.524	0	0.630										-1.172	0	0.269	0	0		0	0	0.071							5201
5204	2 1 3																																					5204
5220	2 3 1	-0.887	0.301	-0.700																			-0.456	0	-1.084													5220
5221	3 1 2	-0.887	0.301	-0.360				0.571	2.221	0.538	-0.524	0	0.385				1.945	0	0.279				-0.865	0	-0.285	0	0	-0.199										5221
5250	3 1 2																-2.364	0	-4.000				-2.643	0														5250
5290	1 3 2	-1.928	-1.417	0.508							-0.180	0	0.732	-0.840	0	-3.337	-1.015	0					-1.365	0	-4.000	0	0	-4.000	0	0	-1.340							5290
5304	3 2 1	-0.658	-0.010	0.490													0.204	0	-0.499				-0.405	0	0.883													5304
5329	2 3 1	0.374	0.573	0.660	0.761	0.706	1.252				0.775	0	0.996							-0.939	0	-2.624				0	0	-0.199	0	0	0.590	-0.409		0				5329
5333	1 2 3	0.603	0.068	-0.275							-1.417	0	0.324	-1.030	0	0.167							-0.150	0	0.453	0	0	-0.863	0	0	0.071	0.357		0				5333
5338	2 3 1	1.406	0.534	0.575										2.130	0	1.207																					5338
5350	2 3 1																																					5350
5352	3 1 2	0.259	0.262	0.831							1.181	0	1.301				-0.014	0	-0.200	0.175	0	-1.027	0.719	0	-0.715	0	0	1.186	0	0	-0.016	-0.562		0				5352
5380	3 1 2	-0.543	-1.408	-2.146							-1.173	0	-0.530										-0.763	0	-4.000	0	0	2.072	0	0	0.850							5380
5419	1 3 2	-0.887	-0.049	0.490				0.603	-0.071	0.480	-0.605	0	0.752										-0.712	0	-1.391	0	0	-0.033	0	0	-0.362	-0.791		0				5419
5446	1 2 3	-0.658	0.379	-0.020							0.369	0	1.362	0.234	0	1.513	-0.340	0	0.997				0.055	0	0.699	0	0	-1.417	0	0	-0.103							5446
5494	2 3 1	0.030	0.146	0.320				0.506	-0.138	0.671	0.775	0	-0.408	1.182	0	-0.445	0.204	0	-0.918							0	0	-2.026										5494
5545	3 2 1	-2.149	-0.165	-0.275				0.959	0.873	0.709																0	0	-0.143	0	0	0.504	2.575		0				5545
5553	2 1 3																-2.245	0	-2.594										0	0	0.331	4.000		0				5553
5615	3 2 1	0.489	-1.020	0.235							0.369	0	0.385				-0.014	0	0.698				-0.610	0	0.576	0	0	1.629	0	0	1.197	0.280		0				5615
5632	2 1 3	-0.429	1.699	-1.976							-0.118	0	-0.103										-0.303	0	-0.530	0			0		-0.449							5632
5701	2 3 1	-0.199	0.301	-0.445																																		5701
5801	2 3 1	-3.066	0.223	-1.466							0.613	0	0.141													0	0	-0.143										5801
5883	2 3 1	-0.658	0.068	-1.125							0.369	0	-1.019										0.106	0	-2.805	0	0	-0.475	0	0	-0.189							5883
5993	1 2 3										-3.934	0	-2.179																									5993
6109	2 3 1	2.782	0.068	-0.020													0.095	0	-1.157				-0.610	0	-1.698	0	0	0.743										6109
6175	1 2 3	1.521	2.942	1.851																																		6175
6224	3 1 2	1.979	0.495	0.745							1.262	0	1.301													0	0	0.078										6224
6232	1 2 3	-0.199	0.184	0.660							-4.000	0	-1.141																									6232
6253	3 2 1	0.030	0.301	-0.190							1.262	0	0.385	0.708	0	-0.078							-0.252	0	-0.285	0	0	1.905	0	0	0.157	0.510		0				6253
6258	2 1 3	-0.280	-1.505	-1.304							0.791		0.593				0.144		0.710																			6258
6343	1 3 2	0.489	0.573	-0.955													1.074	0	0.040				0.515	0	-0.285	0	0	-1.085	0	0	-2.787							6343
6352	1 3 2	-0.429	0.534	-0.275							-0.849	0	-0.408				-0.068	0	-1.696				1.996	0	0.392	0	0	-0.642	0	0	-0.016	-2.551		0				6352
6368	2 1 3	-0.429	-0.088	-0.275	-0.126	0.199	0.128				-0.686	0	0.691				-0.993	0	0.399	0.058	0	1.179	1.077	0	1.068				0	0	0.417	0.510		0				6368
6380	2 3 1	-0.887	-0.437	-4.000	-2.899	0.300	-3.192																-1.325	0	-4.000													6380
6456	1 3 2	-0.887	0.340	0.405							-0.524	0	-0.652	0.392	0	-0.995	-0.340	0	-0.858	-0.704	0	-1.331	0.157	0	-0.961	0	0	-0.199	0	0	0.677	-0.103		0				6456
6490	1 3 2	0.374	0.340	-0.870							0.126	0	0.935													0	0	-0.365	0	0	0.590	0.663		0				6490
6594	3 2 1	0.030	0.146	0.405							-0.199	0	-0.958				2.924	0	-0.918							0	0	-0.365										6594
6628	1 2 3	-1.117	-0.126	-1.636										-2.769	0	-0.506																						6628
6647	3 1 2	-0.199	0.184	0.916														0						0														6647
6658	2 1 3	3.011	1.194	-0.275																						0	0	-1.583										6658
6707	1 3 2	1.635	-1.602	1.426	2.758	-0.941	1.680	-2.271	-2.565	-0.110	0.369	0	1.729	-0.240	0	0.289	0.095	0	0.997	-0.236	0	0.570	-0.405	0	0.576	0	0	-0.365	0		1.543	1.351		0				6707
6730	1 3 2	0.030	-1.486	-1.721													-0.449	0	0.279				-0.712	0	-0.039	0	0	1.020	0		-1.661							6730
6762	2 1 3	0.374	-1.214	0.916							1.100	0	0.508										1.026	0	0.097													6762
6852	3 2 1	0.489	2.049	-0.105							-1.173	0	-1.873				1.836	0	1.596	1.991	0	1.483		0	1.314				0	0	0.937							6852
6885	3 2 1	1.635	-1.486	0.575							-0.118	0	0.569	0.471	0	0.228										0	0	0.964	0	0	0.244	0.357		0	0	0	0	6885

Lab no	Code no	Aerobic microorg. 30 °C			Aerobic microorg. 20 °C			Contaminating microorg.			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 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	
6944	3 1 2				-1.457	-0.029	-0.890										-0.014	0	0.997	-0.177	0	0.570	-0.099	0		0	0	0.687	0	0	0.417	-0.103		0						6944
6958	2 1 3	-1.297	-0.125	-1.691							-0.344	0	-0.103														-1.580											6958
6971	1 3 2	-0.085	-1.059	-0.190							1.506	0	-0.164													0	0	-1.195										6971
7024	1 2 3	1.635	0.806	1.001							1.668	0	0.447													0	0	-0.752										7024
7096	3 2 1	-0.085	-1.175	2.191							1.181	0	-0.958				-0.776	0	0.519	-1.876	0	-0.495	-0.354	0	-0.039				0	0	1.197	-0.485		0					7096
7182	1 3 2	0.718	-0.243	-0.530	0.318	-0.460	0.342	1.249	1.075	0.480	0.856	0	0.447	0.076	0	-0.873	-0.286	0	-0.379				-0.814	0	-0.715														7182
7191	1 3 2	4.000	3.642	4.000	4.000	2.986	4.000							-2.137	0	0.289	-1.755	0	0.040	-1.876	0	-0.495	-0.610	0	-0.285				0	0	-2.095								7191
7207	1 3 2	-0.658	-0.515	1.681							-0.605	0	-2.789													0	0	1.407				-0.715		0				7207
7232	3 1 2	-0.085	-1.525	0.320																																		7232
7242	2 1 3	-0.956	0.309	0.108							-3.674	0	-1.391													0	0	0.477										7242
7248	3 2 1	0.489	0.107	0.575							-0.280	0	-0.042				0.149	0	0.339	0.526	0	0.646	1.741	0	0.699	0	0	1.684	0	0	1.889	-0.562		0				7248
7253	3 1 2	4.000	0.612	0.490							0.450	0	1.057				0.476	0	0.339				0.004	0	-0.592	0	0	0.244	0		0.417							7253
7296	3 1 2	1.635	2.476	1.341										0.629	0	-1.240	-0.177	0	-1.517																			7296
7334	1 2 3	-0.429	0.107	-1.040													-0.449	0	-4.000					0		0	0	0.078	0	0	0.331							7334
7336	2 1 3							-0.191		-2.394	-0.694	0	-1.739																0		0.097							7336
7449	3 1 2	0.145	0.146	0.916							-0.686	0	0.385	0.550	0	0.289																						7449
7543	3 1 2	0.030	-1.408	-2.316	0.207	-0.967	-0.194							1.340	0	-0.261	0.911	0	-0.379				-0.507	0	-1.022													7543
7564	1 2 3	-0.429	0.223	0.405	0.761	0.554	-0.568	-1.205	1.008	0.766	-0.686	0	0.141	1.656	0	1.880	1.999	0	1.716	-0.118	0	1.483	-0.252	0	1.314	0	0	-0.752	0	0	0.590	0.433		0				7564
7596	2 3 1	-0.658	-1.020	1.171	-0.570	-0.409	-0.140				0.126	0	-0.714				0.149	0	-1.397	-1.114	0	-1.560	0.055	0	-1.145	0	0	-1.195	0	0	-3.047							7596
7627	3 1 2	-0.429	1.389	0.320													2.761	0	2.254							0	0	0.964				1.657		0				7627
7688	1 2 3	0.145	0.068	0.660	-0.792	0.402	0.556				-0.930	0	-0.958	0.076	0	-1.240	-1.048	0	-1.038	-0.470	0	0.038										-0.179		0				7688
7728	2 3 1	-0.658	2.127	1.256	-0.237	1.973	1.841										0.911	0	1.237	0.995	0	1.026	1.894	0	0.945	0	0	0.853	0	0	0.417							7728
7750	3 1 2	-0.085	1.194	0.831							-1.092	0	-1.385				-0.612	0	-1.217							0	0	1.463										7750
7825	2 3 1	2.507	1.233	1.366							0.280	0	1.033										0.402	0	0.834				0		-0.233			0				7825
7876	3 1 2	0.833	0.845	1.766							-1.011	0	0.263										1.077	0	1.252	0	0	0.189	0	0	0.417	1.887		0				7876
7877	2 3 1	-0.887	-1.525	-0.105							0.288	0	1.118														0	-0.475										7877
7906	3 2 1	0.145	0.262	-1.296				0.377	0.738	-0.091	-0.362	0	-0.103				0.041	0	0.818				-0.456	0		0	0	-1.749	0		-0.016							7906
7930	1 2 3	0.030	0.495	0.831							-0.199	0	-0.042	1.182	0	1.635	0.530	0	1.357	0.526	0	-0.191	1.485	0	-0.039	0	0	1.020	0	0	-0.016	0.127		0				7930
7940	3 1 2	0.259	1.427	0.320										1.340	0	0.289																						7940
7946	1 3 2	1.521	1.855	-2.146	1.649	0.858	-1.960	0.894	4.000	0.347	-0.037	0	0.630	0.234	0	1.085	0.149	0	0.818	-0.763	0	0.646	-0.354	0	0.330	0	0	-0.918	0	0	0.677	4.000		0	0	0	0	7946
7962	3 2 1	0.030	0.379	-0.955							0.775	0	-0.042	-0.635	0	-0.261	-0.558	0	-0.200	-0.587	0	0.722	0.515	0	0.699	0	0	-0.642	0	0	-1.055	-0.638		0				7962
7984	2 1 3	0.030	-1.408	-0.615							-0.037	0	1.729													0	0	-0.475							0	0	0	7984
8066	1 3 2				-0.015	-1.144	0.020					0	0.508				0.639	0	0.938	-0.177	0	0.874	0.361	0	0.822				0	0	0.417	-0.179		0				8066
8068	3 2 1	-1.117	0.301	0.831	-0.348	-0.384	0.288				1.424	0	-0.530	0.234	0	-0.812	-0.340	0	-1.576	0.761	0	0.038	0.923	0	0.146	0	0	0.466	0	0	-0.276	-1.021		0				8068
8105	3 2 1	0.259	-1.059	-0.360													-0.014	0	0.758				0.055	0	0.207				0	0	0.071							8105
8213	1 2 3	0.489	-1.874	-1.381							0.369	0	1.545										0.106	0	0.883	0	0	0.466							0	0	0	8213
8228	3 1 2	-4.000	0.068	-0.190		-1.930	-4.000							-0.872	0	-0.567										0	0	-1.195										8228
8255	2 3 1	0.489	0.223	1.341							1.587	0	-0.103	1.577	0	-0.506	1.238	0	-0.260	0.936	0	1.635	0.361	0	1.437	0	0	-0.586	0	0	0.764	-1.250		0				8255
8260	3 1 2	1.062	-0.437	0.405							-0.768	0	-1.690	-0.161	0	1.268	-1.428	0	0.279	4.000	0	-0.267	-0.150	0	-0.100	0	0	-0.199	0	0	1.889	4.000		0				8260
8313	2 1 3	0.810	-1.579	-0.241							-0.532	0	-2.850										-1.161	0	-0.684	0	0	-0.608	0	0	0.668	-0.233		0				8313
8333	1 3 2	1.406	0.223	0.405							-0.524	0	-0.714				-0.232	0	-0.798							0	0	0.577				0.357		0				8333
8352	2 3 1	0.030	-1.447	0.745							-4.000	0	4.000	4.000	0	4.000	4.000	0	4.000				4.000	0	4.000	0	0	0.521	0	0	-4.000	-0.791		0				8352
8380	3 2 1	-0.085	0.262	0.490	-0.348	0.630	-0.354				-1.661	0	-0.286	0.392	0	0.718	-0.123	0	1.357	0.585	0	0.038	1.077	0	0.146	0	0	-0.974	0	0	-0.103							8380
8397	2 3 1	0.259	-1.602	-0.020							-0.686	0	0.202										-1.274	0	0.023	0	0	-1.195	0	0	-0.362	-0.179		0				8397
8428	3 1 2	0.374	0.612	0.405				0.959		-1.862	-0.362	0	0.447	0.234	0	0.351	0.041	0	0.459				-0.150	0	-0.961	0	0	0.577	0	0	0.850	0.051		0				8428
8430	3 1 2	4.000	-0.029	2.098							3.235	0	3.505										2.088	0	2.887	0	0	-1.190	0		4.000							8430
8435	2 1 3	-0.635	0.456	0.108	0.151	-0.399	-0.333				-0.443	0	0.636	0.044	0	0.020	-0.384	0	-0.415	0.579	0	0.357	1.531	0	0.404	0	0	0.477	0	0	4.000	-0.194		0				8435
8523	1 2 3	0.145	0.418	0.405							0.207	0	0.813																									8523
8529	1 2 3	1.177	0.884	1.171							2.399	0	1.118							1.464	0	0.722	2.303	0	0.269	0	0	1.463	0		0.331	1.198		0				8529
8568	1 3 2	-1.461	-0.864	1.086							-0.930	0	-0.164				-0.449	0	-0.439							0	0	-0.531				-1.021		0				8568
8626	2 1 3	-0.773	-0.088	-1.125	-1.014	0.326	-4.000				0.288	0	-0.958				-1.755	0	-2.235	-1.876	0	-3.385	-2.551	0	-2.620													8626
8628	3 1 2	0.259	0.418	0.150	-0.237	-0.916	1.038				-0.037	0	-0.775	-0.161	0	-0.506	-0.721	0	-1.457	0.058	0	0.646	0.208	0	0.637	0	0	1.961	0	0	-1.748	0.051		0				8628
8657	1 3 2	0.489	1.233	-0.530							1.830	0	-0.164																									8657
8734	1 2 3	-1.002	-0.243	0.745							-2.959	0	-0.103																									8734
8742	1 3 2	-1.117	-0.437	-0.360									4.000				-4.000	0	-4.000				-4.000	0	-4.000				0	0	-0.016							8742
8756	1 3 2	0.374	-1.486	-1.806							1.181	0	0.630										-0.150	0	-0.776	0	0	-1.527			-2.008							8756
8766	3 2 1	0.718	0.146	0.575							-0.524	0	0.508										1.741	0	0.084	0	0	0.466	0	0	0.850	2.040		0				8766
8891	3 2 1	-0.085	0.418	0.320				-0.333	-0.408	0.823	-0.037	0	0.874	-0.240	0	0.228							0.566	0	0.883	0	0		0	0	1.023							8891
8909	3 2 1	-0.314	0.223	0.405							0.044	0	0.385	0.392	0	1.941							0.566	0	-0.776	0	0	0.023	0	0	0.331	-0.256		0				8909
8918	3 1 2	0.718	-0.010	-0.275				0.700	-0.610	0.366							-0.123	0	0.997				0.208	0	-0.408	0	0	-0.752	0	0	0.157							8918
8961	1 3 2	0.489	2.010	4.000							1.018	0	-1.019													0	0	-2.026										8961
9002	2 1 3	0.259	0.495	1.086							1.100	0	0.263				0.530	0	0.339				0.004	0	0.023	0	0	-0.808	0	0	1.023							9002
9007	3 2 1	0.718	-1.408	-1.976										-0.082	0	0.656							0.974	0	-1.145													9007
9034	2 1 3	-0.429	0.223	0.150	-0.126	0.959	0.823				-0.362	0	-1.446										0.310	0	0.576													9034

Lab no	Code no			Aerobic microorg. 30 °C			Aerobic microorg. 20 °C			Contaminating microorg.			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 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	
9051	2	1	3	-0.199	0.340	0.575							-1.417	0	0.141	-1.899	0	0.045	-1.374	0	-0.738				-1.223	0	-1.944				0	0	-4.000							9051
9086	1	2	3	-0.479	0.717	-1.285										-1.096	0	-0.183								0					0								9086
9217	3	1	2	-0.429	-2.185	-1.976							0.288	0	-0.103													0	0	1.020	0	0	-0.882	-0.256		0				9217
9245	2	3	1	0.030	-0.010	0.150							-0.037	0	-0.164													0	0	0.355										9245
9429	1	2	3	0.030	0.456	0.575				-1.238	0.199	0.842	-0.199	0	-0.958	-0.398	0	-0.812	0.095	0	-0.200	-0.587	0	-1.179	-0.610	0	-0.838	0	0	-0.143	0	0	-0.709	-0.103		0				9429
9436	3	2	1	0.030	-0.515	-0.785							-1.985	0	-1.568	-1.425	0	-1.179	0.149	0	-1.157	-4.000	0	-0.951	-0.661	0	-0.899	0	0	-0.199	0	0	-0.276	-0.332		0				9436
9451	1	3	2	0.030	-0.593	0.150	-0.570	-0.865	-1.532				0.126	0	0.569	0.076	0	0.718	0.911	0	1.476	1.581	0	3.993	0.106	0	3.342	0	0	-0.475	0	0	0.417	0.280		0				9451
9453	1	2	3	-0.199	0.184	-2.146				-0.010	-4.000	-1.710	0.126	0	-0.347													0	0	-4.000	0		-0.536	2.346		0				9453
9512	3	1	2	0.030	-0.126	-0.445							-1.742	0	0.385													0	0	0.023										9512
9559	3	2	1	-0.429	-0.126	-0.445	-0.126	-0.815	0.395	0.700	0.131	0.004	-0.037	0	-2.545				-0.449	0	1.057				0.464	0	1.006	0	0	1.130	0		0.937				0	0	0	9559
9569	1	3	2	0.259	0.612	0.235				0.636	-0.138	0.480	-0.524	0	-0.775	-2.137	0	-0.200	0.258	0	0.279	-0.118	0	0.342			0.392	0	0	0.189	0	0	-0.189	0.204		0				9569
9662	1	3	2	-0.429	-0.010	-0.360							-0.849	0	0.813	-0.398	0	0.045	-0.340	0	0.040				-0.610	0	-0.039	0	0	-4.000	0	0	0.764	-2.321		0				9662
9747	2	1	3	0.489	-0.126	-1.210																						0	0	-1.195										9747
9753	3	1	2	0.603	-0.826	0.490							1.100	0	1.301	1.340	0	0.840	0.911	0	0.938	0.468	0	0.266	-0.150	0	0.637				0	0	1.110							9753
9783	2	3	1	0.374	0.146	0.405																																		9783
9890	2	3	1	0.718	0.612	-0.020	0.540	0.503	-0.676				1.506	0	0.691				1.020	0	0.219				0.259	0	-0.100	0	0	-0.033	0	0	-0.449							9890
9903	1	3	2	0.145	0.301	0.575	0.872	0.731	0.770				1.181	0	-0.714							1.698	0	0.266	2.507	0	0.330	0	0	0.411	0	0	0.504	0.051		0				9903
9923	3	1	2	-2.493	0.340	-0.530							-1.255	0	0.141				-0.884	0	0.159				-0.610	0	-0.530				0	0	-1.921							9923
9950	1	3	2				-0.237	1.390	-0.568	0.765	-0.543	0.176										2.049	0	0.494				0	0	-0.475				0.280		0				9950

Rapporter som utgivits 2012

1. Fisk, skaldjur och fiskprodukter – analys av näringsämnen av V Öhrvik, A von Malmborg, I Mattisson, S Wretling och C Åstrand.
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4. Proficiency Testing – Food Microbiology, January 2012 by C Normark, I Boriak and L Nachin.
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6. Mikrobiologiska dricksvattenrisker ur ett kretsloppsperspektiv – behov och åtgärder av R Dryselius.
7. Market Basket 2010 – chemical analysis, exposure estimation and health-related assessment of nutrients and toxic compounds in Swedish food baskets.
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9. Kontroll av restsubstanser i levande djur och animaliska livsmedel. Resultat 2010 av I Nordlander, Å Kjellgren, A Glynn, B Aspenström-Fagerlund, K Granelli, I Nilsson, C Sjölund Livsmedelsverket och K Girma, Jordbruksverket.
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21. Dioxin- och PCB-halter i fisk och andra livsmedel 2000-2011 av T Cantillana och M Aune.
22. Not publiced.
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24. Proficiency Testing – Drinking Water Microbiology, 2012:2, September by T Šlapokas and K Mykkänen.

Rapporter som utgivits 2013

1. Contaminants and minerals in foods for infants and young children – analytical results, Part 1, by V Öhrvik, J Engman, B Kollander and B Sundström.

   Contaminants and minerals in foods for infants and young children – risk and benefit assessment, Part 2 by G Concha, H Eneroth, H Hallström and S Sand.

   Tungmetaller och mineraler i livsmedel för spädbarn och småbarn. Del 3 Risk- och nytto-hantering av R Bjerselius, E Halldin Ankarberg, A Jansson, I Lindeberg, J Sanner Färnstrand och C Wanhainen.

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26. Proficiency Testing – Food Microbiology, October 2013 av L Nachin, C Normark and I Boriak.

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