

Date: 19/10/23

Manufacturer: Shimadzu Diagnostics Corporation

Test kit: CompactDry X-SA

Study number: 2008LR14 extension

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Do you expect the study to be finished in time?

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Please complete the table below (only to be completed with the first protocol and if changes occur)

Validation number	Alternative method	Organism	Matrices	Reference method	Validation partners
2008LR14 extension	CompactDry X-SA	coagulase positive staphylococci (<i>Staphylococcus aureus</i>)	Broad range of foods, environmental samples and pet food	ISO 6888-1: 2021	MicroVal

**Extension study MCS report for the ISO 16140-2:2016 validation
of Compact Dry X-SA, for the enumeration of coagulase positive
staphylococci (*Staphylococcus aureus*) in a broad range of
foods, environmental samples and pet food and animal feed**

MicroVal study number: 2008LR14 extension study

Method/Kit name: Compact Dry X-SA

MCS/ILS combined report version: summary report

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The protocol is prepared in accordance with ISO 16140-2:20016 and the most recent version of the MicroVal Technical Committee for interpretation on ISO 16140-2.

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Method/Kit name: Compact Dry X-SA

Validation standard: Microbiology of the food chain— Method validation

Part 1: Vocabulary (ISO 16140-1:2016) and

Part 2: Protocol for the validation of alternative (proprietary) methods against a reference method (ISO 16140-2:2016)

Reference method: ISO 6888-1: 2021 Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of coagulase - positive staphylococci (*Staphylococcus aureus* and other species) - Part 1 - Technique using Baird-Parker agar medium.

Scope of validation: Broad range of foods, environmental samples and pet food and animal feed

Certification organization: Lloyd's Register

List of abbreviations

- AL	Acceptability Limit
- AP	Accuracy Profile
- Art. Cont.	Artificial contamination
- CFU	Colony Forming Units
- CL	confidence limit (usually 95%)
- EL	Expert Laboratory
- $\bar{d}$	Average difference
- g	Gram
- h	Hour
- ILS	Interlaboratory Study
- Incl/Excl	Inclusivity and Exclusivity
- LOQ	Level of Quantification
- MCS	Method Comparison Study
- min	minute
- ml	Millilitre
- MR	(MicroVal) Method Reviewer
- MVTC	MicroVal Technical Committee
- n	number of samples
- na	not applicable
- neg	negative (target not detected)
- ng	no growth
- nt	not tested
- RT	Relative Trueness
- SD	standard deviation of differences
- 10 ⁻¹ dilution	10-fold dilution of original food
- 10 ⁻² dilution	100-fold dilution of original food

And, in *S. aureus* studies

- BPW	Buffered Peptone Water
- PSD	Peptone Salt Diluent
- MRD	Maximum Recovery Diluent
- NA	Nutrient Agar
- PCA	Plate Count Agar
- BPA	Baird Parker Agar

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1 Introduction

In this project a MicroVal validation study, based on ISO 16140-2:2016, of alternative method(s) for the enumeration of coagulase positive staphylococci (*Staphylococcus aureus*) in a broad range of foods was carried out by Campden BRI as the MicroVal Expert Laboratory.

The original study was conducted following ISO16140:2013 and on renewal, additional work on relative trueness and accuracy profile was done to fulfil the requirements of ISO 16140-2:2016. As the design of the ILS remained unchanged between the 2 versions of the 16140 protocol the original data was analysed according to the new statistical approach outlined in ISO16140-2:2016.

An extension study was carried out at the request of the manufacturer to include 2 further categories (Environmental samples and pet food and animal feed) to extend the scope of the validation for this media. This study was completed in August 2023 by Campden BRI as the MicroVal Expert Laboratory.

The alternative method used is:

Enumeration of *Staphylococcus aureus* on Compact Dry XSA, incubated at $37^{\circ}\text{C} \pm 1^{\circ}\text{C}$ for $24 \pm 2\text{h}$.

Compact Dry X-SA plates are ready-to-use dry media sheets comprising culture medium and a cold-soluble gelling agent, rehydrated by inoculating 1 ml diluted sample into the centre of the self-diffusible medium. The Compact Dry X-SA plates contain a chromogenic medium and selective agents for the detection and enumeration of *Staphylococcus aureus* which form blue colonies after $24 \pm 2\text{h}$ at $37 \pm 1^{\circ}\text{C}$.

Reference method is:

ISO 6888-1: 2021 Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of coagulase - positive staphylococci (*Staphylococcus aureus* and other species) - Part 1 - Technique using Baird-Parker agar medium.

Scope of the validation study is: 2 further categories (Environmental samples and pet food)

Categories included:

- Dairy products
- Dried/ low moisture products
- Meat and poultry
- Ready to eat foods
- Multi component foods or meal components

- Environmental samples
- Pet food and animal feed

Criteria to be evaluated during the study:

- Method Comparison Study (MCS)
 - Relative Trueness study
 - Accuracy profile study
 - Inclusivity and exclusivity study
 - Interlaboratory Study (ILS)¹

Conclusions for the study

Overall, the conclusions for the study are:

- The alternative method Compact Dry X-SA for enumeration of coagulase positive staphylococci (*Staphylococcus aureus*) shows satisfactory results for relative trueness;
- Following on from a root cause analysis of the negative bias seen in the pet food and animal feed relative trueness samples it is recommended that the incubation times for the sample types are 22h for wet pet food and 44h for dry food and animal feed.
- The alternative Compact Dry X-SA for the enumeration of coagulase positive staphylococci (*Staphylococcus aureus*) shows satisfactory results for accuracy profile;
- The Compact Dry X-SA for the enumeration of coagulase positive staphylococci (*Staphylococcus aureus*) in foods method was shown to be specific and selective.
- The alternative method Compact Dry X-SA for the enumeration of coagulase positive staphylococci (*Staphylococcus aureus*) shows satisfactory results for the ILS
- The alternative method Compact Dry X-SA for the enumeration of coagulase positive staphylococci (*Staphylococcus aureus*) shows comparable performance to the reference method. ISO 6888-1: 2021 Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of coagulase - positive staphylococci (*Staphylococcus aureus* and other species) - Part 1 - Technique using Baird-Parker agar medium.
- During the study it was noted that samples containing stressed organisms require an incubation time longer than 22h used for the initial samples. Based on the results of a root cause analysis, it is

recommended that samples thought to contain stressed organisms
require an incubation time of up to 48h.

2 Method protocols

The Method Comparison study was carried out using 10g portions of sample material.

2.1 Reference method

See the flow diagram in Annex A.

Sample preparations used in the reference method were done according to ISO 6887-series parts 1, 2, 3, 4 and 5. Plating was done according to ISO 7218:2007+A1:2013 section 10.2.2 which says at least one plate per dilution shall be used with at least two successive dilutions. If only one dilution was used, then two plates of this dilution were used to improve reliability of the results. Depending on the sample being tested and the expected contamination level, single or multiple dilutions were used with single or duplicate plates if considered necessary to improve the reliability of the calculated result and ensure at least two relevant plates were available for use in calculations.

2.2 Alternative method

See the flow diagram in Annex A

See the Kit insert in Annex B.

Compact Dry X-SA plates are ready-to-use dry media sheets comprising culture medium and a cold-soluble gelling agent, rehydrated by inoculating 1 ml diluted sample into the centre of the self-diffusible medium. The Compact Dry X-SA plates contain a chromogenic medium and selective agents for the detection and enumeration of *Staphylococcus aureus* which form blue colonies after 24+/-2h at 37±1°C.

2.3 Study design

According to ISO 16140-2 the reference method and alternative methods were performed with, as far as possible , exactly the same sample

Samples of product containing the target organism were diluted 1 in 10 with an appropriate diluent according to ISO 6887 and homonegised in a stomacher. Appropriate serial dilutions were made and all relevant dilutions were analysed using the reference method and alternative method.

3 Methods Comparison Study

3.1 Relative trueness study

The trueness study is a comparative study between the results obtained by the reference method and the results of the alternative method. This study was conducted using naturally or artificially contaminated samples. Different categories, types and items were tested for this.

A total of 5 food categories were included in the original validation study and a further 2 categories (environmental and pet food and animal feed) were evaluated in the extension study. A minimum of 15 items for each category were tested by both the reference method and the alternative method in the relative trueness study, with a minimum of 15 interpretable results per category.

Each category was made up of 3 types, with at least 5 items representative for each type.

3.1.1 Number of samples

The categories, the types and the number of samples analyzed are presented in Table 1.

Table 1. List of Categories, Types, and examples of Items to be tested within the relative trueness study.

Category	Types	Items	No of samples	ISO 6887
Milk and dairy products	Dairy desserts	chilled custard, trifle, cream, ice cream, custard slice	5	6887-5
	Pasteurised / raw milk products	yogurt, milk drinks	5	6887-5
	Cheese	soft cheese, hard cheese, raw milk cheese	5	6887-5
Dried/ low moisture products	Chilled RTC batters and pasta	filled tortelloni, ravioli	5	6887-1, 6887-4
	Infant formula and cereals	probiotic infant cereals, rusks, infant milk	5	6887-1, 6887-4
	Dehydrated powders	soups, gravy, milk powders	5	6887-1, 6887-4
Meat and poultry	poultry	cooked sliced chicken, cooked chicken fillets, cooked BBQ chicken chunks	5	6887-2

Category	Types	Items	No of samples	ISO 6887
	Cooked and fermented meat	salami, pepperoni, chorizo, ham	5	6887-2
	Raw meats	mince, sausages, chicken breast fillet	5	6887-2
Ready to eat foods	Ready to eat/reheat chilled/frozen foods	quiche, pizza, cottage pie	5	6887-2
	Cooked/cured fish products	prawns, smoked salmon, seafood terrine, salmon Pate	5	6887-3
	Cut ready to eat fresh produce	fruit mixes, bagged leafy vegetables, carrot batons	6	6887-2
Multi component foods or meal components	Composite foods with substantial raw ingredients	sandwiches, pasta salads,	5	6887-1, 6887-4
	Mayonnaise based raw and processed salads	coleslaw, sandwich spreads	5	6887-1, 6887-4
	Composite processed meals	lasagne, fish pie, spaghetti bolognese	5	6887-1, 6887-4
Environmental samples (food or feed production)	Surfaces (wipes, swabs)	Equipment, floors, walls	5	ISO 18593
	Process water	Wash water, cooling water	5	6887-6
	Dust	Bakery and food manufacturing environment	5	6887-1, 6887-4
Pet food and animal feed	Dry food	Pellets, kibbles, treats	5+6 additional samples for root cause analysis	6887-4
	Wet food (raw and canned)	Pates, sausages	5+8 additional samples for root cause analysis	6887-4
	Animal feeds (poultry and fish)	Cereals and flours	5+6 additional samples for root cause analysis	6887-4

127 samples were analyzed, leading to 127 exploitable results.

In the initial 5 food category study, 10/76 samples were naturally contaminated and 66/76 samples were artificially contaminated. The artificial contamination was carried out using a mixture of seeding and spiking protocols and a summary of the protocols used is listed in the table below on pg 11. The level of injury for cultures used for spiking was evaluated by plating the pure culture post stress on both selective and non-selective media. Further details of the artificial contamination is given in Annex C for reference.

No naturally contaminated environmental and pet food samples were found during the pre-screening for the extension study. It was therefore necessary to use artificial contamination procedures for the additional 2 categories. Artificial procedures used a range of seeding protocols and strains in order to examine a wide range of different conditions.

Further details of the artificial inoculation used in the studies are given in the table below

Sample type	Procedure for artificial contamination
process water	Seeding and storage of samples post inoculation for 48h $\pm$ 2h at 2-8°C to chill stress the cells
surfaces and dust samples	Seeding and storage of samples post inoculation and storage for 2 weeks at ambient
Dry animal feed and Dried/rehydrated & low moisture products	Seeding with lyophilised cells and storage for 2 weeks at ambient
Wet pet food and heat treated foods	Spiked with heat stressed cultures with a minimum of 0.5log injury. N.b The level of injury would be evaluated by plating on a non-selective agar e.g. Nutrient Agar and a selective agar e.g. Nutrient Agar plus 3% salt. It is proposed to obtain at least 0.5log injured cells.
Acidified foods	Spiked with acid stressed cultures with a minimum of 0.5log injury. N.b The level of injury would be evaluated by plating on a non-selective

Sample type	Procedure for artificial contamination
	agar e.g. Nutrient Agar and a selective agar e.g. Nutrient Agar plus 3% salt. It is proposed to obtain at least 0.5log injured cells.

Twenty six *S. aureus* isolates were used for artificial inoculations. These cultures preferably originated from comparable sample types as the ones to be inoculated. Each particular strain was used to contaminate up to 5 different items.

Inoculation of samples was at the range usually associated with the test organisms and within the capabilities of the test methods, covering the range 10²cfu/g to 10⁷cfu/g for food samples and 10¹cfu/g to 10⁵cfu/g for surface samples

In accordance with ISO 16140-2, a minimum of 15 items for each category were tested by both the reference method and the alternative method in the relative trueness study, made up of at least three types with at least 5 interpretable results per type.

3.1.2 *Protocols applied during the validation study*

Incubation time

A single protocol was applied for the study.

Reference method plates were incubated at 37±1°C for 24±2h initially followed by a re-incubation for a further 24±2h at 37±1°C.

The alternative method was incubated at 37±1°C for 24±2h.

In all cases the minimum incubation time of 22h was used for the alternative method.

Confirmation was carried out on the reference method was by stabbing up to 5 typical colonies onto RBPF agar to check for coagulase activity. The plates were incubated at 37±1°C for 24±2h to check for the presence of a precipitation halo indicating a positive result. For the alternative method, a confirmation was not needed for samples that were artificially contaminated.

Confirmations if required for the alternative method

Confirmations were not performed as not required by the kit insert of the alternative method.

3.1.3 Test results

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

During the extension study, a negative bias of -0.257 was observed in the pet food category for the 15 samples initially analysed. A root cause analysis was carried out to determine the potential cause of the bias seen in this category. Initial investigations revealed that the correct incubation times and in date media were used for the analysis of the pet foods samples.

Analysis of the data showed that the bias was in all 3 sample types in the category with 3 animal feed, 2 in dry food and 3 in wet pet food respectively.

Ten additional pet food samples (3 animal feed, 3 dry food and 4 wet food) were run as part of the root cause analysis to investigate possible reasons for the negative bias seen in this category. The extra pet food samples were tested with the original incubation time 22h and an extended incubation time of 44h which was equivalent to the incubation period of the reference method.

The results shown in this report include the original dataset as well as the additional pet food samples tested in the root cause analysis.

3.1.4 Calculation and interpretation of relative trueness study

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

Figure 1a shows the scatter plot for *Staphylococcus aureus* in Dairy products

Figure 1b shows the scatter plot for *Staphylococcus aureus* in Dried/ low moisture products

Figure 1c shows the scatter plot for *Staphylococcus aureus* in Meat and poultry

Figure 1d shows the scatter plot for *Staphylococcus aureus* in Ready to eat foods

Figure 1e shows the scatter plot for *Staphylococcus aureus* in Multicomponent foods

Figure 1f shows the scatter plot for *Staphylococcus aureus* in Environmental samples (food or feed production)

Figure 1g shows the scatter plot for *Staphylococcus aureus* in Pet food and animal feed.

The Figure 2 shows the scatter plot for all the categories.

Figure 1a - Scatter plot of the reference method versus alternative method results for the Dairy products

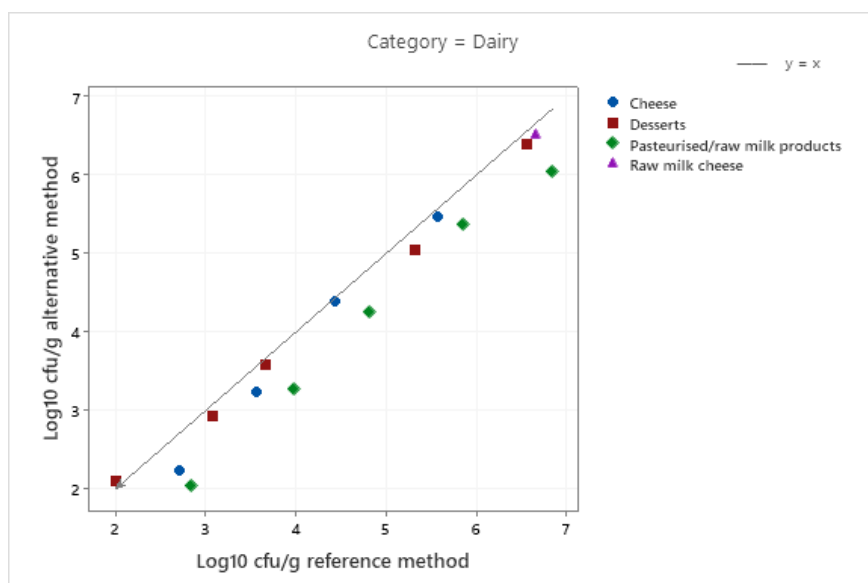
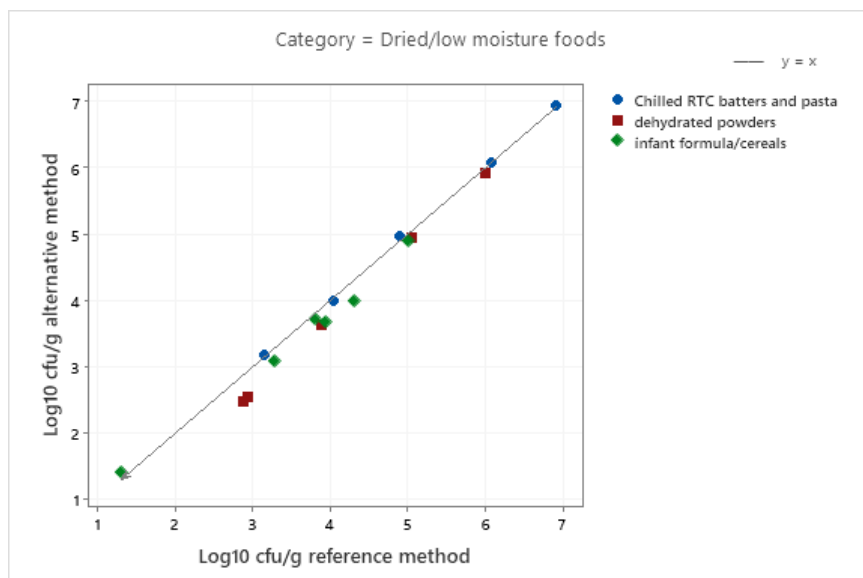


Figure 1b - Scatter plot of the reference method versus alternative method results for the Dried/ low moisture products



1c - Scatter plot of the reference method versus alternative method results for Meat and poultry

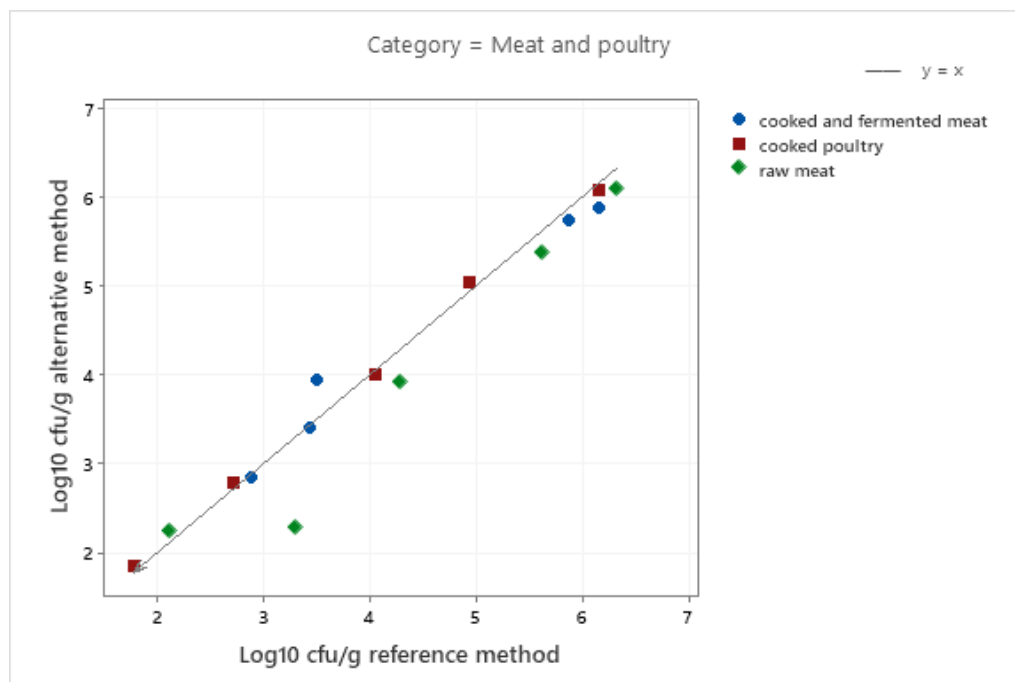


Figure 1d - Scatter plot of the reference method versus alternative method results for the Ready to eat foods

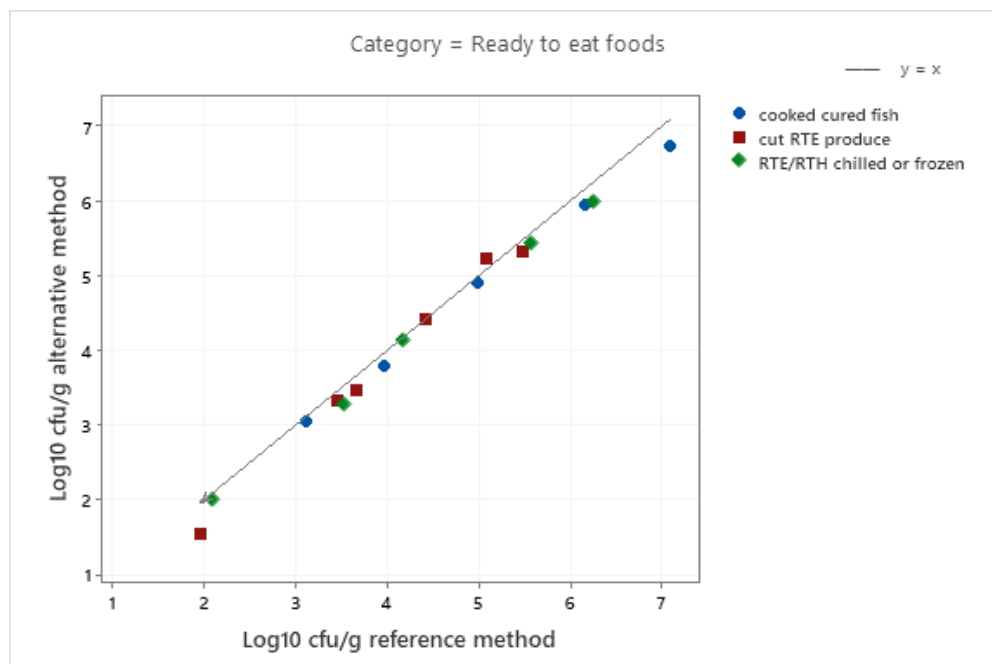


Figure 1e - Scatter plot of the reference method versus alternative method results for the multicomponent foods

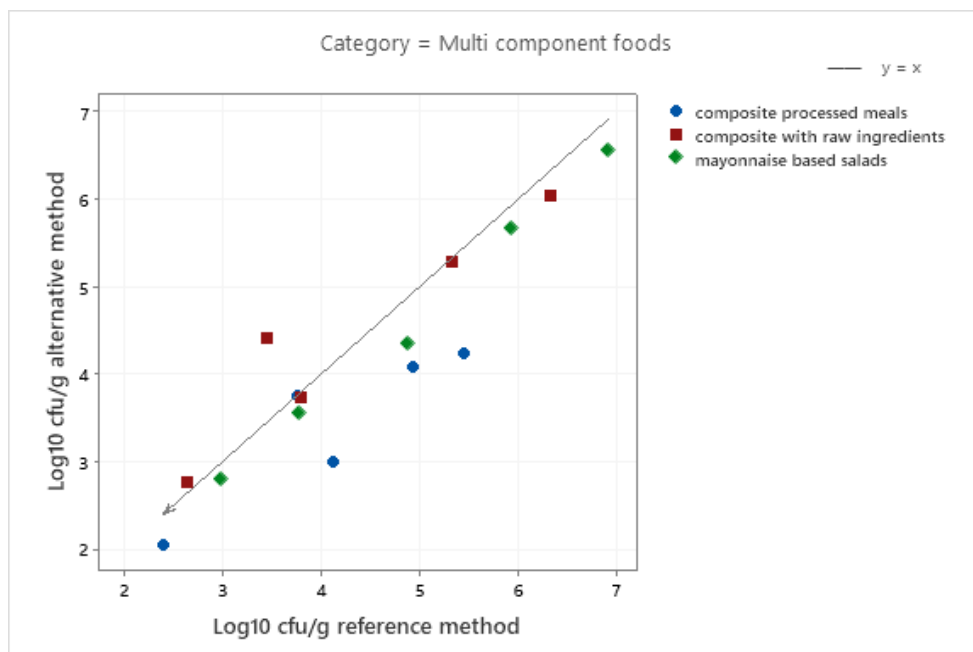


Figure 1f- Scatter plot of the reference method versus alternative method results for the Pet food and animal feed

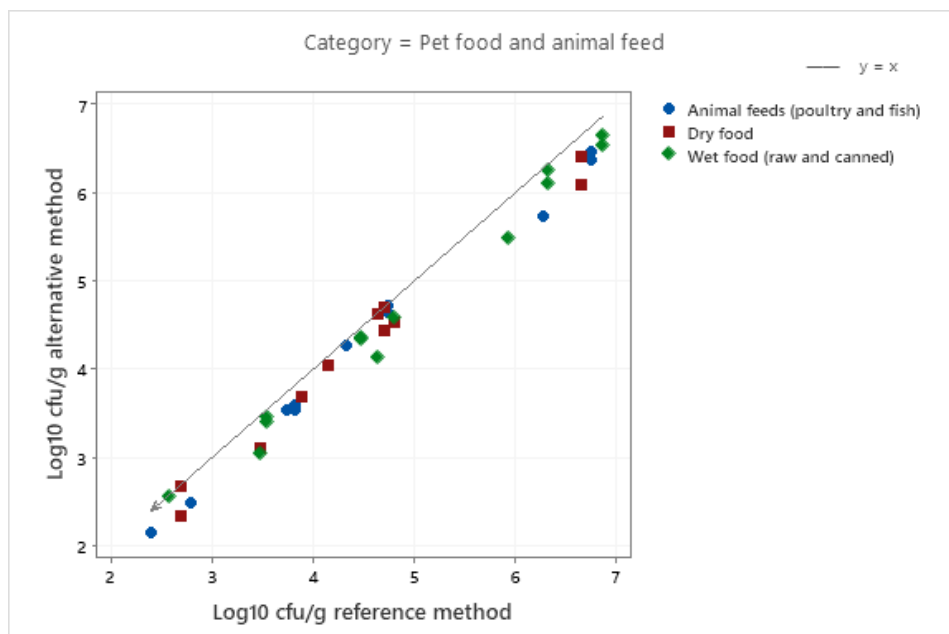


Figure 1g- Scatter plot of the reference method versus alternative method results for the Environmental samples

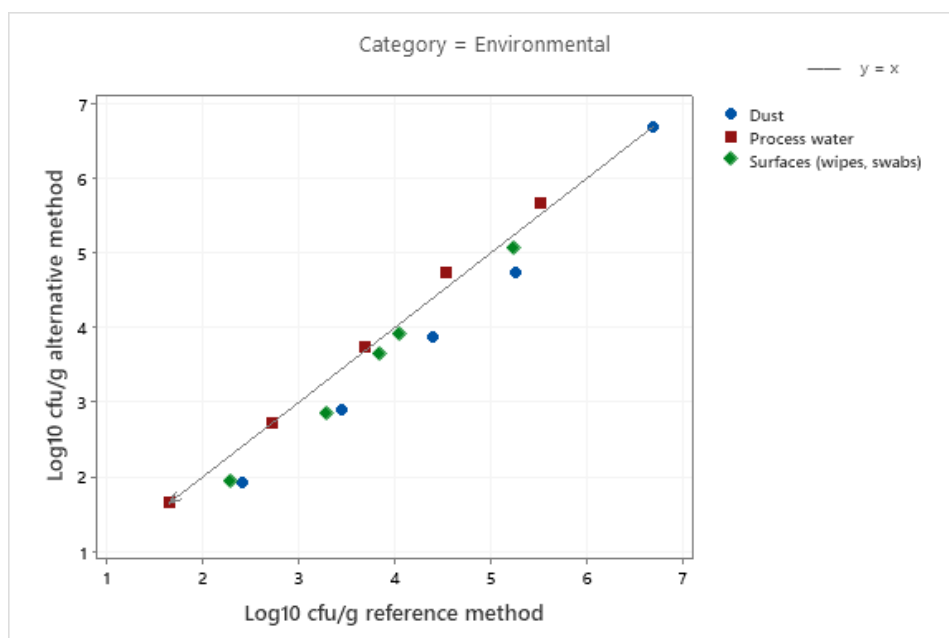


Figure 3 - Scatter plot of the reference method versus alternative method results for all the categories

A summary of the calculated values per category is provided in Table 2.

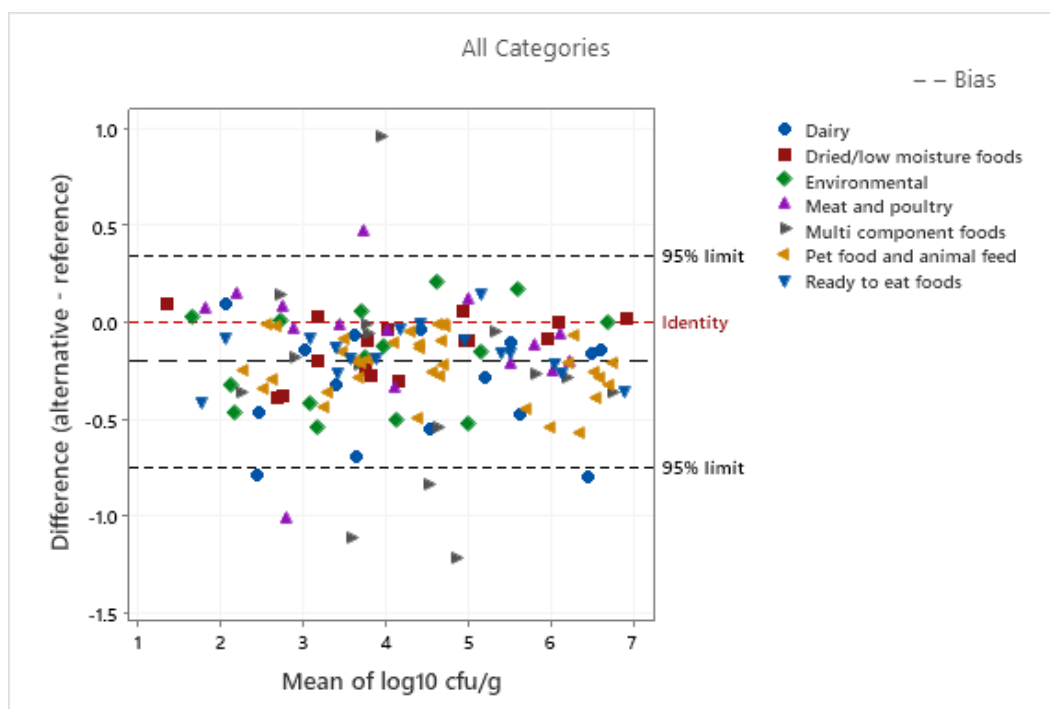
Table 2 - Summary of the calculated values per category

Category.	n	Dbar	sD	95% Lower limit	95% Upper limit
Dairy	15	-0.329	0.286	-0.962	0.305
Dried/low moisture foods	16	-0.125	0.156	-0.467	0.218
Environmental	15	-0.183	0.263	-0.767	0.400
Meat and poultry	15	-0.097	0.323	-0.813	0.619
Multi component foods	15	-0.291	0.527	-1.459	0.877
Pet food and animal feed	35	-0.225	0.157	-0.549	0.099

Category.	n	Dbar	sD	95% Lower limit	95% Upper limit
Ready to eat foods	16	-0.149	0.137	-0.449	0.151
All Categories	127	-0.203	0.277	-0.752	0.347

The Bland-Altman difference plot for all the samples is given Figure 3.

Figure 3– Bland-Altman difference plot for all the samples



The data in the scatter plots show good agreement between the reference and alternative methods with no obvious disagreement. A slight negative bias of -0.220 was noted in the 7 categories analysed in the study.

Two categories had a negative bias of -0.25 or lower (dairy products and multipcomponent foods), and these categories were approved in the original study. Further analysis of the dairy data set indicated that only 1 random samples of cheese and desserts gave a negative bias of greater than -0.25. All 5 of the pasteurised milk samples had a negative bias of greater than -0.25. As the same heat treated isolate was used to inoculate the 5 samples, the likely explanation would be that this was a strain specific

issue as other heat treated samples analysed in the initial study did not have significant negative bias. Furthermore, the limited bias seen in the accuracy profile for the dairy products category supports the conclusion that systematic bias is not present in this category.

Additional analysis of the results for multicomponent foods showed that both positive and negative bias was seen amongst the samples tested. The results suggest that the bias is therefore likely to be random and not linked to any specific trend. In addition, the limited bias noted in the accuracy profile for the multicomponent foods category supports this conclusion.

During the extension study, a negative bias of -0.257 was observed in the pet food category for the 15 samples initially analysed. A root cause analysis was carried out to determine the potential cause of the bias seen in this category. The results of the root cause analysis are given and discussed on pages 21-25.

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

Table 1 - Data which are outside of the accepted limits

Type	item	CRA code of S. aureus strain used, Contamination protocol	Code	Reference method Log cfu/g	Alternative method Log cfu/g	Mean Log cfu/g	Difference (Alternative-reference)
cooked and fermented meat	salami	3097 , seeded stored at ambient 2 weeks	1C	3.49	3.96	3.73	0.47
composite with raw ingredients	sweet chilli chicken noodle salad	n/a , natural	41B	3.45	4.41	3.93	0.97
raw meat	pork loin steak	n/a , natural	28B	3.30	2.28	2.79	-1.02
composite processed meals	fish pie	1238, spiked with heat treated cells (55°C for 5 min)	35	4.11	3.00	3.56	-1.11
	macaroni cheese	1234, spiked with acid shocked cells pH2 60 min	14	4.92	4.08	4.50	-0.84
	tuna pasta bake	1238 , heat treatment 55°C for 5 min	10B	5.45	4.23	4.84	-1.22

Pasteurised/raw milk products	Greek style yogurt	2078 , heat treatment 55°C for 5 min	66	2.83	2.04	2.44	-0.79
	peaches and cream yogurt		32	6.84	6.04	6.44	-0.80

Samples with a positive bias of greater than 0.5 log cfu per g

The samples with a positive bias are given in the table below

Type	item	Strain	Code	Difference (Alternative-reference)
composite with raw ingredients	sweet chilli chicken noodle salad	n/a , natural	41B	0.97

Samples with a negative bias of greater than -0.5 log cfu per g

Category	Type	Sample code	Strian	Inoculation protocol	Difference
Pasteurised/raw milk products	Greek style yogurt	66	2078	Spiked with heat treated cells 55oC/5mins	-0.79
Pasteurised/raw milk products	low fat natural yogurt	36			-0.69
Pasteurised/raw milk products	banana milk	54			-0.55
Pasteurised/raw milk products	peaches and cream yogurt	33			-0.80
Dust	Oven top	E23	2095	Seeding and storage of 2 weeks at ambient	-0.54
Dust	Base of equipment	E24			-0.51
Dust	Bakery sink corner	E25			-0.52
raw meat	pork loin steak	28B	n/a	Natural	-1.02

Category	Type	Sample code	Strian	Inoculation protocol	Difference
composite processed meals	macaroni cheese	14	1238	Spiked with heat treated cells 55oC/5mins	-0.84
composite processed meals	tuna pasta bake	10B			-1.22
composite with raw ingredients	sweet chilli chicken noodle salad	41B	n/a	Natural	0.97
mayonnaise based salads	reduced fat potato salad	70	1234	Spiked with heat treated cells pH2 60 min	-0.54
Animal feeds (poultry and fish)	Chicken feed – corn 22h incubation	14	1208	Seeding and storage of 2 weeks at ambient	-0.54
Dry food	complete natural and small breed dry adult dog food lamb and rice 22h incubation	22hR3	1219	Seeding and storage of 2 weeks at ambient	-0.57

It is expected that not more than one in 20 data values will lie outside the CLs. In this study there 8 from a total of 127 data points which were outside of the accepted limits. This is slightly outside the expectation for the section of the study. There are more negative deviations than positive deviations with 6 negative deviation and 2 positive deviations.

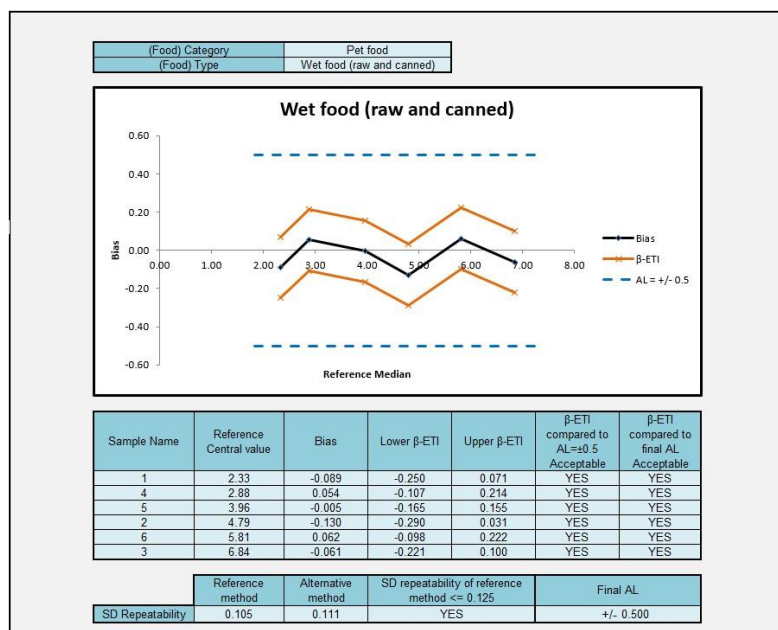
Analysis of the data showed that there were no identifiable trends in the sample which covered 5 different food categories, 6 different inoculated strains and naturally contaminated samples. The majority of the samples outside the AL were artificially contaminated with heat treated isolates.

During the extension study, additional samples were carried out to investigate possible causes of the negative bias observed in the pet food and animal feed category. Analysis of the data from the original data showed that 3 samples of animal feed, 2 dry food and 3 wet pet food as shown in the table below gave a log difference -0.24 or lower.

Type	item	CRA code	inoculation	injury	Sample code	log(Ref)	log(Alt)	Mean	Difference
Animal feeds (poultry and fish)	King British Tropical fish mini pellets	1208	lyophilised	n/a	12	2.4	2.1	2.3	-0.24
Animal feeds (poultry and fish)	Chicken feed - corn	1208	lyophilised	n/a	14	6.3	5.7	6.0	-0.54
Animal feeds (poultry and fish)	Organic mixed corn for chickens	1239	lyophilised	n/a	S11	4.3	4.3	4.3	-0.04
Animal feeds (poultry and fish)	Chicken oyster shell supplement	1239	lyophilised	n/a	S12	3.7	3.5	3.6	-0.20
Animal feeds (poultry and fish)	goldfish flakes with mealworms	1239	lyophilised	n/a	S13	2.8	2.5	2.6	-0.29
dry food	mature dog biscuit bones	1217	lyophilised	n/a	4	4.8	4.5	4.7	-0.27
dry food	complete dry kitten food turkey and rice	1219	lyophilised	n/a	S1	4.6	4.6	4.6	-0.01
dry food	complete adult dry cat food turkey and rice	1219	lyophilised	n/a	S2	4.1	4.0	4.1	-0.10
dry food	Feline health dry kitten food	1219	lyophilised	n/a	S3	3.9	3.7	3.8	-0.19
dry food	complete natural and small breed dry adult dog food lamb and rice	1219	lyophilised	n/a	S4	3.5	3.1	3.3	-0.36
wet food (raw and canned)	gourmet cat food - mouse with salmon and cascading gravy	1991	heat	1.5	6	2.6	2.6	2.6	-0.01
wet food (raw and canned)	Applaws Tuna fillet natural cat food	1991	heat	1.5	9	4.8	4.6	4.7	-0.22
wet food (raw and canned)	complete nutrition dry puppy food chicken with vegetables	1214	heat	1.6	S6	5.9	5.5	5.7	-0.45
wet food (raw and canned)	wet adult dog food lamb with brown rice	1214	heat	1.6	S8	4.6	4.1	4.4	-0.50
wet food (raw and canned)	deliciously tasty luxury mousse wet adult cat food salmon	1214	heat	1.6	S9	3.5	3.0	3.3	-0.44

No obvious trends were observed for the animal feed and dry food where the discrepant samples were artificially contaminated using different lyophilized isolates. The same strains were also inoculated into other samples within the respective types with limited or no bias noted.

The 3 discrepant wet pet food samples were spiked with the same heat treated strain (CRA1224) which had a relatively high level of log injury of 1.65logs. The level of injury could have contributed to the slower growth of the organism on the alternative media. In addition, further work carried out on an accuracy profile on wet pet food contaminated with the isolate CRA 1991 showed very limited bias at all levels of contamination of 10^2 to 10^7 cfu per g. A copy of the accuracy profile graph is shown below for reference.



Ten additional pet food samples (3 animal feed, 3 dry food and 4 wet food) were run as part of the root cause analysis to investigate possible reasons for the negative bias seen. The extra pet food samples were tested with the original incubation time 22h and an extended incubation time of 44h which was equivalent to the incubation period of the reference method. Details of the results obtained are given in the table below.

Type	Item	Sample code	Strian	Inoculation protocol	Log Difference (Ref- alt) 22h	Log Difference (Ref- alt) 44h
Animal feeds (poultry and fish)	Organic mixed corn for chickens	R8	1219	Seeding and storage of 2 weeks at ambient	-0.10	-0.02
Animal feeds (poultry and fish)	King British (API) Tropical fish mini pellets	R9	1219	Seeding and storage of 2 weeks at ambient	-0.28	-0.21
Animal feeds (poultry and fish)	Love fish shrimp + snail	R10	1219	Seeding and storage of 2 weeks at ambient	-0.39	-0.29
Dry food	mature dog biscuit bones	R1	1219	Seeding and storage of 2 weeks at ambient	-0.26	-0.01
Dry food	cat treats with chicken, liver and turkey	R2	1219	Seeding and storage of 2 weeks at ambient	-0.34	-0.01
Dry food	complete natural and small breed dry adult dog food lamb and rice	R3	1219	Seeding and storage of 2 weeks at ambient	-0.57	-0.26
Wet food (raw and canned)	complete nutrition puppy food chicken with vegetables	R4	1991	Spiked with Heat treated cells 55C for 5 min log injury 0.6log	-0.15	-0.08
Wet food (raw and canned)	wet adult dog food lamb with brown rice	R5	1991	Spiked with Heat treated cells 55C for 5 min log injury 0.6log	-0.13	-0.12
Wet food (raw and canned)	deliciously tasty luxury mousse wet adult cat food salmon	R6	1991	Spiked with Heat treated cells 55C for 5 min log injury 0.6log	-0.21	-0.07

Type	Item	Sample code	Strian	Inoculation protocol	Log Difference (Ref- alt) 22h	Log Difference (Ref- alt) 44h
Wet food (raw and canned)	gourmet mon pet con sardine	R7	1991	Spiked with Heat treated cells 55C for 5 min log injury 0.6log	-0.32	-0.21

The results show that at 22h a reduced level of negative bias was obtained for the repeat samples compared to the initial samples. This indicates that the initial results were random and not a systemic issue with unacceptable negative bias. When the incubation time of the plates was extended from 22h to 44h, the counts increased for most of the samples when compared to the short incubation period. The increase in counts resulted in a reduce negative bias with the 44h incubation.

Less negative bias was observed with the repeats of the wet pet food compared to the original data. The initial wet pet food samples with high discrepancies between the reference and alternate counts were inoculated with CRA 1214 with a log injury of 1.65 and the repeat samples spiked with CRA 1991 and a log injury of 0.6log. The reduction in negative bias supports the initial conclusion of the root cause analysis that the heat injury contributed to the slow growing of the cells and that the larger discrepancy in results could also be due to a strain effect.

In summary, the 22h and 44h incubation time gave an acceptable level of bias, however the recommendation would be to have an incubation time of 22h for wet pet food and 44h for dry food and animal feed.

As the bias for the dried and low moisture foods was -0.1215 it is proposed to maintain the incubation time for dried foods at 22h.

3.2 Accuracy profile study

The accuracy profile study is a comparative study between the results obtained by the reference method and the results of the alternative method. According to ISO 16140-2:2016 this study was conducted using artificially contaminated samples. One type per category was tested with 2 items per type.

This study was conducted with 2 items per category as shown in Table 3.

Table 3. Categories, types, items, strains and inoculation levels for accuracy profile study

Category	Types	Inoculated Strain	Item	Inoculation levels
Dairy products	Dairy desserts	<i>S.aureus</i> CRA 1215 from cheese	Chilled custard	Low:500cf/g
				Medium : 10000cfu/g
				High : 1000000cfu/g
			Raw milk cheese	Low:500cf/g
				Medium : 10000cfu/g
				High : 1000000cfu/g
Dried/rehydrated & low moisture products	Powders	<i>S.aureus</i> CRA 2095	RTC pasta	Low:500cf/g
				Medium : 10000cfu/g
				High : 1000000cfu/g
			Infant cereal	Low:500cf/g
				Medium : 10000cfu/g
				High : 1000000cfu/g
Meat and poultry	RTE meats	<i>S.aureus</i> CRA 1217 from cooked beef	Pastrami	Low:500cf/g
				Medium : 10000cfu/g
				High : 1000000cfu/g
			Cooked sliced chicken roll	Low:500cf/g
				Medium : 10000cfu/g
				High : 1000000cfu/g
Ready to eat foods	Cooked fish products e.g. prawns	<i>S.aureus</i> CRA 1208 from smoked fish	Fresh cooked prawns	Low:500cf/g
				Medium : 10000cfu/g
				High : 1000000cfu/g
			Smoked salmon	Low:500cf/g
				Medium : 10000cfu/g
				High : 1000000cfu/g
Multi component foods	Composite foods with raw /processed ingredients	<i>S.aureus</i> CRA 3097 from pasta	Pasta salad	Low:500cf/g
				Medium : 10000cfu/g
				High : 1000000cfu/g
			Sandwich spread	Low:500cf/g
				Medium : 10000cfu/g
				High : 1000000cfu/g
Environmental samples (food and feed)	Surfaces	<i>Staphylococcus aureus</i> CRA 1234 isolated from food poisoning outbreak	Stainless steel (4" x 4")	100/test area
				1000/test area
				10000/test area
			Plastic chopping board (4" x 4")	100/test area
				1000/test area
				10000/test area

Category	Types	Inoculated Strain	Item	Inoculation levels
Pet food and animal feed	Dry Food	<i>Staphylococcus aureus</i> CRA 1991 isolated from raw chicken	Kibble for dogs	10 ² cfu /g
				10 ⁵ cfu/g
				10 ⁶ cfu/g
			Cat treats	10 ² cfu /g
				10 ⁴ cfu/g
				10 ⁵ cfu/g

For the initial 5 food category study 100g samples were inoculated and stored at 2-8°C for 48-72h prior to analysis with the exception of dried/rehydrated & low moisture products. Samples of dried products were inoculated with freeze dried culture and stored at ambient for 2 weeks prior to analysis.

A bulk inoculation was carried out for the pet food samples using lyophilised cultures as the inoculum. After mixing to distribute the inoculum, five separate 10g test portions was removed from the bulk sample. The test portions was mixed with 90ml of the appropriate diluent and enumerated on both methods as shown in Appendix A.

Environmental surfaces were individually inoculated using an appropriate volume and concentration of inoculum. The inoculum was evenly distributed over the test area without excessive accumulation that may cause uneven drying. Following inoculation, the surfaces was dried at room temperature (18-25°C) until the surface is visibly dry.

3.2.1 Calculations and interpretation of Accuracy profile study

All results are tabulated, calculated and interpreted According to ISO 16140-2. The statistical results are shown in Figures 5 to 6

All raw data per category are given in Excel file: tab Accuracy Profile

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

Figure 4: Accuracy profile for Dairy products

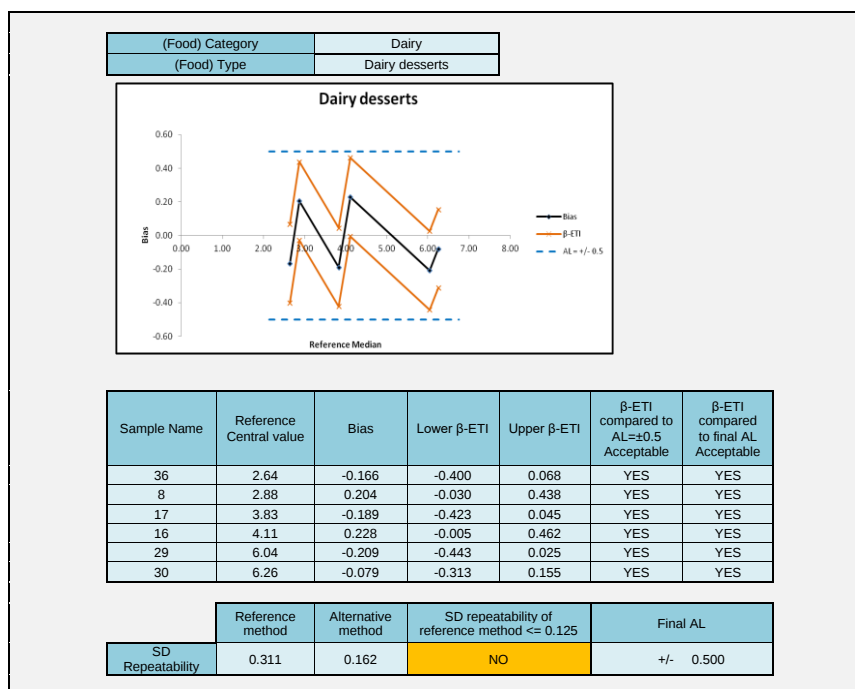


Figure 5: Accuracy profile for Dried/ low moisture products

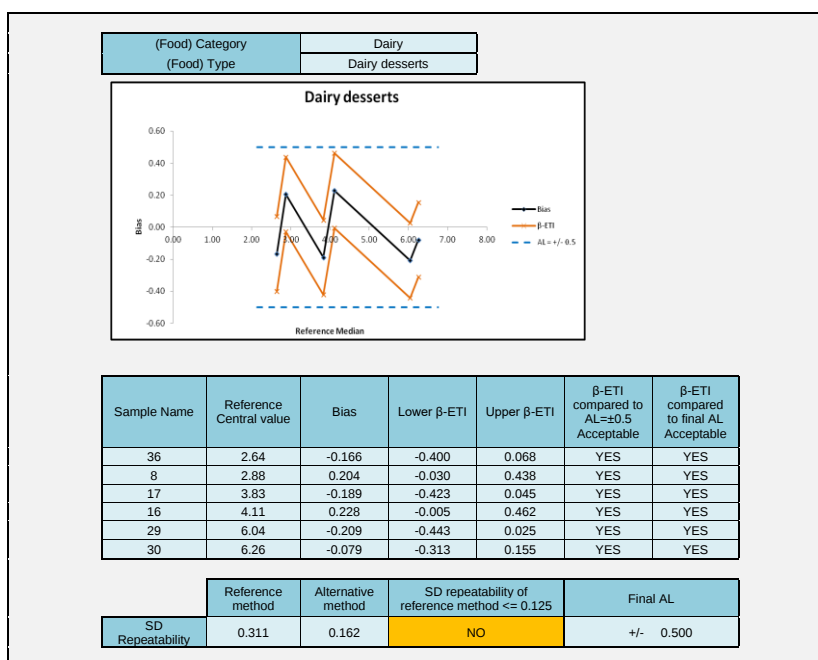


Figure 6: Accuracy profile for Meat and poultry

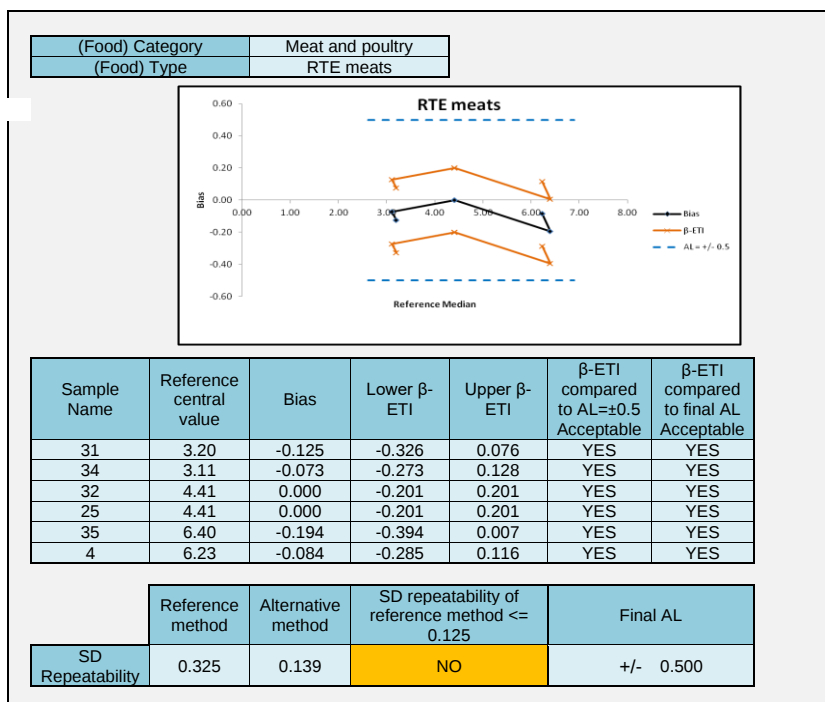


Figure 7: Accuracy profile for Ready to eat foods

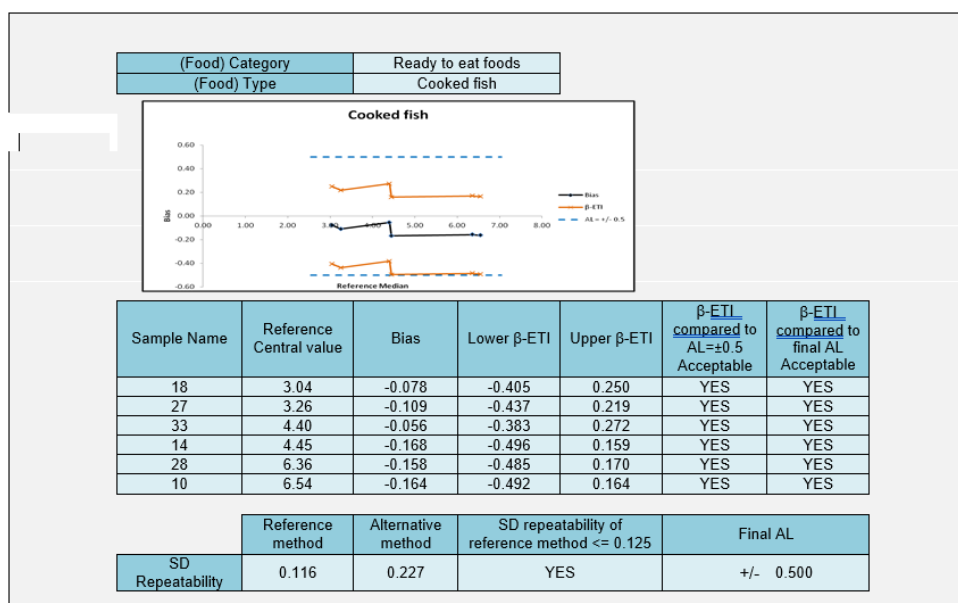


Figure 8: Accuracy profile for Multicomponent Foods

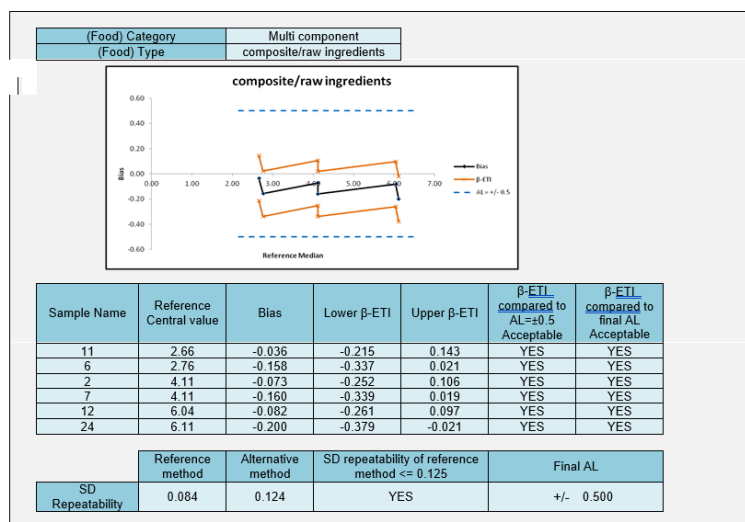


Figure 9: Accuracy profile for Environmental samples (food and feed) category

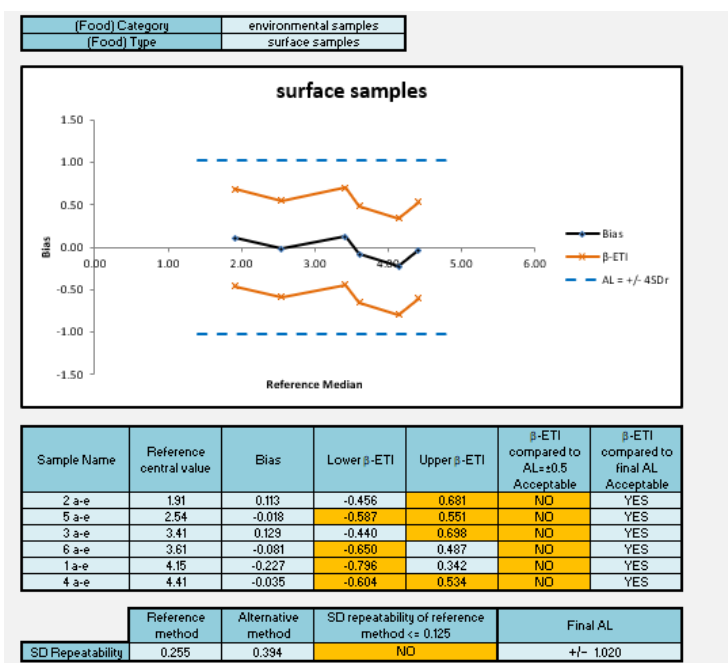
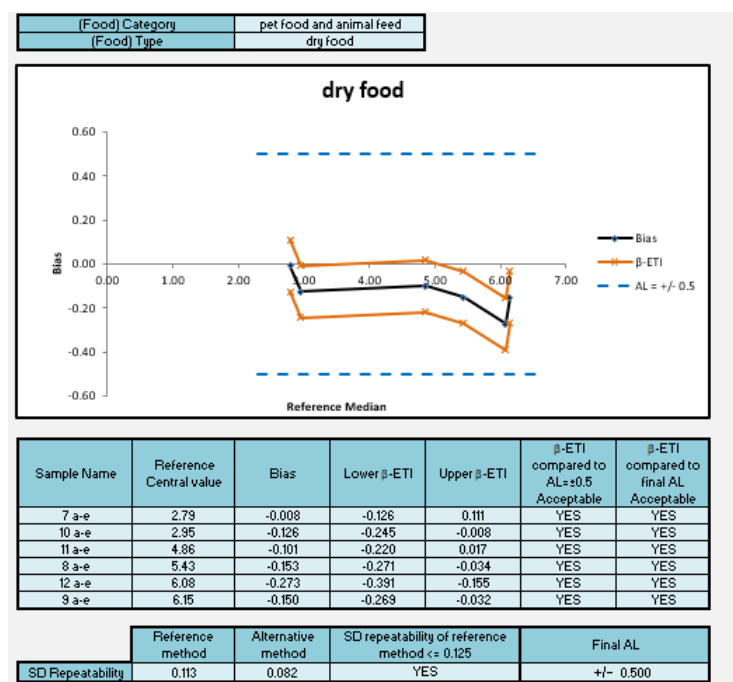


Figure 10: Accuracy profile for Pet food and animal feed category



Six out of the seven categories met the AL of 0.5log (Dairy products, dried/low moisture foods, Meat and poultry, Ready to eat foods and multicomponent foods, and Pet food and animal feed). The other category (Environmental samples (food and feed) required the new AL to be calculated. All data met the new AL values of 1.020.

The surface samples category had a high repeatability for the reference method which resulted in a recalculation of the AL for this category. The possible cause of the high variability was the difference in die off of the inoculum of the surfaces post inoculation. Analysis of the data showed that the log difference between the counts for the reference and alternative methods was no greater than 0.6 log, with the majority of the counts being below 0.4logs.

3.2.2 Conclusion Accuracy profile study

The Accuracy of the Alternative method (Easy Plate SA) is satisfied as all categories met the 0.5log AL or the re-calculated AL.

3.3 Inclusivity and exclusivity study

The inclusivity study is a study involving pure target strains to be detected or enumerated by the alternative method.

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

3.3.1 2.4.1 Protocol

After being grown according to appropriate conditions, decimal dilutions were made and the 51 target strains and 31 non-target strains were enumerated by the alternative method, the reference method and a non selective agar (TSA).

3.3.2 2.4.2 Results

Of the 51 inclusivity strains tested all strains were detected using the alternative method. For the reference method 49 of the strains were detected.

Those not detected by the reference method but detected by the alternative method were: *S.aureus* 1236 and 1241. A count was detected using the reference method but upon confirmation were negative.

Of the 31 exclusivity strains tested, 27 were not detected and 2 were detected using both the reference and alternative methods. The 2 detected cultures were *S.delphini* NCIMB 8709 and *S.cohnii*. Two strains were detected by the reference method only. These were *S.delphini* NCIMB 13206 and *S.intermedius* 254.

3.4 Limit of quantification (LOQ)

The LOQ applies only to instrumental methods. It does not apply to methods based on counting visible colonies. It may also not apply to instrumental methods where it is not possible to get blank samples e.g. instrumental methods for total plate counts.

The alternate method is based on visible colonies therefore the LOQ does not have to be calculated for the alternative method in this study.

3.5 Conclusion (MCS)

Overall, the conclusions for the Method Comparison are:

- The alternative method Compact Dry X-SA for enumeration of coagulase positive staphylococci (*Staphylococcus aureus*) shows satisfactory results for relative trueness;
- Following on from a root cause analysis of the negative bias seen in the pet food and animal feed relative trueness samples it is recommended that the incubation times for the sample types are 22h for wet pet food and 44h for dry food and animal feed.
- The alternative Compact Dry X-SA for the enumeration of coagulase positive staphylococci (*Staphylococcus aureus*) shows satisfactory results for accuracy profile;

- The Compact Dry X-SA for the enumeration of coagulase positive staphylococci (*Staphylococcus aureus*) in foods method was shown to be specific and selective.
- During the study it was noted that samples containing stressed organisms require an incubation time longer than 22h used for the initial samples. Based on the results of a root cause analysis, it is recommended that samples thought to contain stressed organisms require an incubation time of up to 48h.

4 Interlaboratory Study

The experimental design for the interlaboratory study is the same in ISO16140:2003 and ISO16140-2:2015. However, the statistical analysis of the data is different. In this study the existing ILS data were used to recalculate the new statistics using this data as shown below.

4.1 Calculations and interpretation of data

The data from the collaborative trial were calculated and interpreted according to section 6.2.3 of ISO 16140-2:2016 using the freely available Excel® spreadsheet (<http://standards.iso.org/iso/16140>).

The log transformed data from the existing trial is shown in Table 9 below and the Accuracy profile graph is shown in Figure 11.

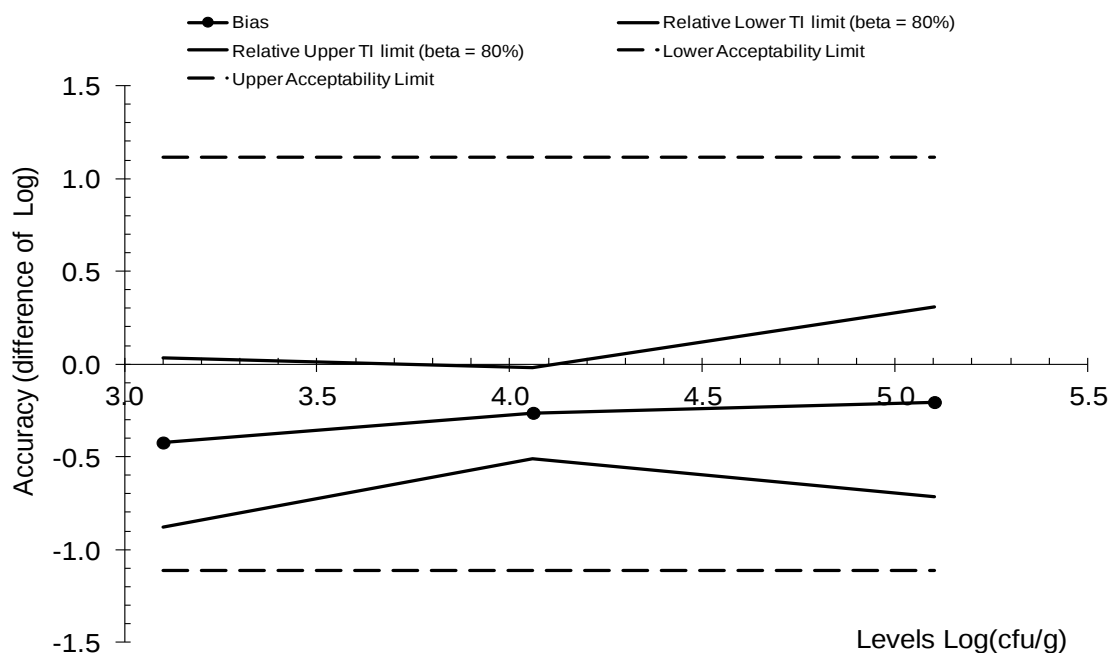
Table 9: Summary of the results of the interlaboratory study per analyte level (k)

		Reference method x_{ijk}	Alternative method k_{ijk}
Collaborators (i)	Level (k)		
1	Blank	<10	<10
2	Blank	<10	<10
3	Blank	<10	<10
4	Blank	<10	<10

		Reference method x _{ijk}		Alternative method k _{ijk}	
Collaborators (i)	Level (k)				
5	Blank	<10		<10	
6	Blank	<10		<10	
7	Blank	<10		<10	
8	Blank	<10		<10	
9	Blank	<10		<10	
10	Blank	<10		<10	
		Duplicate 1	Duplicate 2	Duplicate 1	Duplicate 2
1	Low	3.411	3.310	2.630	2.850
2	Low	3.080	2.970	2.850	2.730
3	Low	2.750	3.240	2.580	2.710
4	Low	3.310	3.300	3.160	2.950
5	Low	3.030	3.150	2.439	2.700
6	Low	3.140	3.330	2.630	3.130
7	Low	3.340	3.240	2.950	3.000
8	Low	3.050	3.150	2.710	2.500
9	Low	2.820	2.600	2.079	1.881
10	Low	2.960	2.820	2.590	2.470
1	Medium	4.560	4.180	3.870	3.790
2	Medium	3.960	4.020	3.840	3.770

		Reference method x _{ijk}		Alternative method k _{ijk}	
Collaborators (i)	Level (k)				
3	Medium	3.700	3.630	3.580	3.610
4	Medium	4.230	4.180	4.160	4.160
5	Medium	3.970	4.000	3.700	3.810
6	Medium	4.060	4.040	3.730	3.820
7	Medium	4.270	4.460	3.910	3.970
8	Medium	4.120	4.100	3.720	3.670
9	Medium	3.810	4.160	3.460	3.830
10	Medium	3.850	3.910	3.731	3.820
1	High	5.520	5.510	5.000	5.030
2	High	5.120	5.190	4.990	4.940
3	High	4.840	4.790	4.630	4.710
4	High	5.510	5.350	5.640	5.680
5	High	5.020	5.060	4.860	4.850
6	High	5.310	5.260	4.920	4.850
7	High	5.530	5.750	5.040	5.030
8	High	5.120	5.190	4.570	4.840
9	High	4.180	5.130	4.060	4.510
10	High	3.660	5.000	4.890	4.900

Figure 11: Accuracy profile of the alternative method (XSA) in the Inter laboratory study



The statistical analysis of the existing ILS data is shown in Table 5 below. It can be seen that the repeatability standard deviation (S_r) was better for the alternate method than the reference method ranging from 0.096 to 0.165 for XSA and 0.126 to 0.373 for the reference method.

The between-labs standard deviation (S_L) was similar for the alternative method (0.145 to 0.336) and the reference method (0.178 to 0.309) and the reproducibility standard deviation (S_R) was better for the alternative method (0.174 to 0.358) than the reference method (0.228 to 0.485).

According to the ISO 16140-2:2016 standard, if any of the values of the β -ETI fall outside of the $\pm 0.5 \log$ AL then a further calculation is done to calculate the pooled average S_R of the reference method. This was done and gave an S_R value of 0.337. This value was used to recalculate the new AL as a function of the standard deviation (AL_s) using the formula $3.3 \times S_{R,ref}$ which gives new AL_s values of +1.11 and -1.11. These are plotted in Figure 4 and it can be seen that no values lie outside of these AL_s values and therefore the alternative method is accepted as being equivalent to the reference method.

It can be seen from Figure 4 and Table 10 that there is a slight bias in the data with the alternate method giving slightly lower average values than the reference method for the low, medium and high categories (-2.05 to -0.423). This was previously reported in the original ILS where the average bias across the three levels was -0.283 which is similar to the in the average bias in the new calculation of -0.297.

It was previously accepted that whilst there was evidence of a small underlying bias between the two methods with the ISO method giving slightly higher plate count results than the Compact dry X-SA, however this was considered to have no major microbiological implications considering the magnitude of the bias and the different formats of the test methods.

The alternative method is therefore accepted as being equivalent to the reference method in the Inter laboratory study

Table 10. Statistical analysis of the ILS data according to the ISO spreadsheet

Accuracy profile			
Study Name	XSA ILS analysis		
Date	Campden BRI		
Coordinator	22/12/2016		
Tolerance probability (beta)	80%	80%	80%
Acceptability limit in log (lambda)	1.11	1.11	1.11

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

Levels	Alternative method			Reference method		
	Low	Medium	High	Low	Medium	High
Target value	3.100	4.061	5.102			
Number of participants (K)	10	10	10	10	10	10
Average for alternative method	2.677	3.798	4.897	3.100	4.061	5.102
Repeatability standard deviation (sr)	0.165	0.096	0.121	0.142	0.126	0.373
Between-labs standard deviation (sL)	0.277	0.145	0.336	0.178	0.196	0.309
Reproducibility standard deviation (sR)	0.323	0.174	0.358	0.228	0.233	0.485
Corrected number of dof	11.659	12.162	10.090	13.149	12.044	15.678
Coverage factor	1.417	1.412	1.435			
Interpolated Student t	1.359	1.355	1.371			
Tolerance interval standard deviation	0.3364	0.1810	0.3740			
Lower TI limit	2.220	3.552	4.384			
Upper TI limit	3.134	4.043	5.410			
Bias	-0.423	-0.263	-0.205			
Relative Lower TI limit (beta = 80%)	-0.880	-0.508	-0.718			
Relative Upper TI limit (beta = 80%)	0.034	-0.018	0.308			
Lower Acceptability Limit	-1.11	-1.11	-1.11			
Upper Acceptability Limit	1.11	1.11	1.11			

New acceptability limits may be based on reference method pooled variance

Pooled repro standard dev of reference	0.337
--	-------

TRUE

FALSE

Select ALL blue lines to draw the accuracy profile as illustrated in the worksheet "Graph Profile"

6 Conclusions of the ILS study

Overall, the conclusions for the ILS are:

- The alternative method Compact Dry X-SA for the enumeration of coagulase positive staphylococci (*Staphylococcus aureus*) shows satisfactory results for the ILS

7 Overall conclusions of the MCS/ILS study

Overall, the conclusions for the study are:

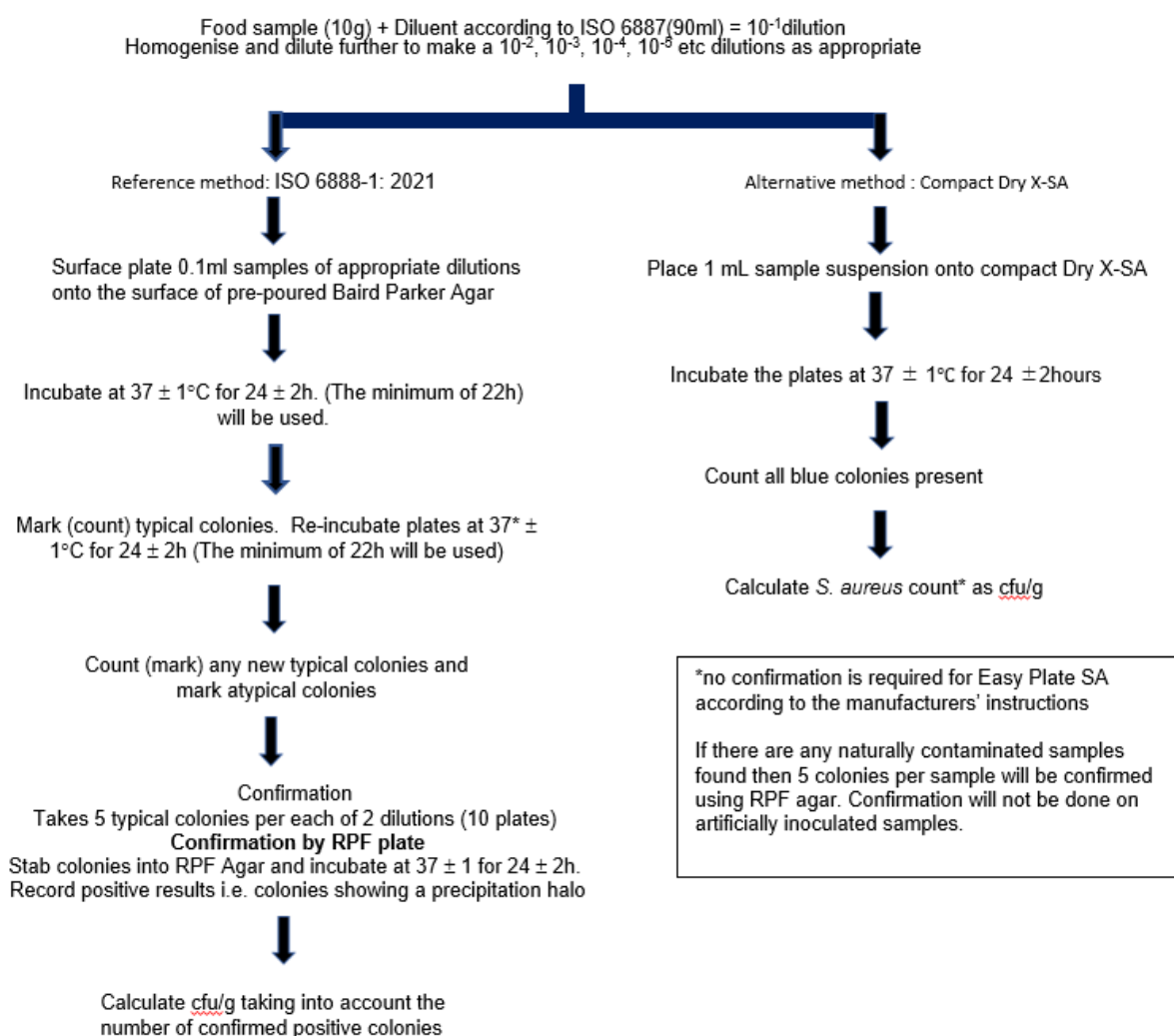
- The alternative method Compact Dry X-SA for enumeration of coagulase positive staphylococci (*Staphylococcus aureus*) shows satisfactory results for relative trueness;
- Following on from a root cause analysis of the negative bias seen in the pet food and animal feed relative trueness samples it is recommended that the incubation times for the sample types are 22h for wet pet food and 44h for dry food and animal feed.

- The alternative Compact Dry X-SA for the enumeration of coagulase positive staphylococci (*Staphylococcus aureus*) shows satisfactory results for accuracy profile;
- The Compact Dry X-SA for the enumeration of coagulase positive staphylococci (*Staphylococcus aureus*) in foods method was shown to be specific and selective.
- The alternative method Compact Dry X-SA for the enumeration of coagulase positive staphylococci (*Staphylococcus aureus*) shows satisfactory results for the ILS
- The alternative method Compact Dry X-SA for the enumeration of coagulase positive staphylococci (*Staphylococcus aureus*) shows comparable performance to the reference method. ISO 6888-1: 2021 Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of coagulase - positive staphylococci (*Staphylococcus aureus* and other species) - Part 1 - Technique using Baird-Parker agar medium.
- During the study it was noted that samples containing stressed organisms require an incubation time longer than 22h used for the initial samples. Based on the results of a root cause analysis, it is recommended that samples thought to contain stressed organisms require an incubation time of up to 48h.

Signature Suzanne Jordan

Date 20/02/24

ANNEX A: FLOW DIAGRAM OF THE REFERENCE AND ALTERNATIVE METHODS



ANNEX B: KIT INSERT

Refer to separate pdf



ANNEX C: Raw data per category

Artificial contamination of the samples

Category	Codes	Item	Strain	Soiking	Seeding	Iniurv
Dairy	72	chilled custard	1227		frozen/1 week	
Dairy	48	strawberry trifle	1227		frozen/1 week	
Dairy	8	cream	1227		frozen/1 week	
Dairy	38	ice cream	1227		frozen/1 week	
Dairy	62	custard slice	1227		frozen/1 week	
Dairy	66	Greek style yogurt	2078	55oC/5mins		0.36
Dairy	36	low fat natural yogurt	2078	55oC/5mins		0.36
Dairy	54	banana milk	2078	55oC/5mins		0.36
Dairy	33	chocolate milk	2078	55oC/5mins		0.36
Dairy	32	peaches and cream yogurt	2078	55oC/5mins		0.36
Dairy	53	Full fat soft cheese (Philadelphia)	1214		chill/2 days	
Dairy	51	Double Gloucester	1214		chill/2 days	
Dairy	2	Blue Stilton	1214		chill/2 days	
Dairy	24	President Brie	1214		chill/2 days	
Dairy	60	Raw Ewes milk cheese	1214		chill/2 days	
Dried/low moisture foods	45	Cherry tomato and buffalo milk mozzarella ravioli	1219		chill/2 days	
Dried/low moisture foods	20	Chicken and bacon tortellini	1219		chill/2 days	
Dried/low moisture foods	67	spinach and ricotta tortellini	1219		chill/2 days	
Dried/low moisture foods	23	italian sausage and ham tortellini	1219		chill/2 days	
Dried/low moisture foods	25	Pilau rice	1219		chill/2 days	
Dried/low moisture foods	63	Beba optipro infant milk pro-biotic	1223		ambient/2 weeks	
Dried/low moisture foods	34	Nan pro biotic infant milk	1223		ambient/2 weeks	



Category	Codes	Item	Strain	Spiking	Seeding	Injury
Dried/low moisture foods	30	cerelac infant cereal pro biotic gluten free	1223		ambient/2 weeks	
Dried/low moisture foods	64	cerelac infant cereal pro biotic	1223		ambient/2 weeks	
Dried/low moisture foods	74	infant cereal 5 grain pro biotic	1223		ambient/2 weeks	
Dried/low moisture foods	46	skimmed milk powder	1446		ambient/2 weeks	
Dried/low moisture foods	19	vegetable soup in a mug	1446		ambient/2 weeks	
Dried/low moisture foods	29	cheddar cheese sauce	1446		ambient/2 weeks	
Dried/low moisture foods	42	parsley sauce	1446		ambient/2 weeks	
Meat and poultry	16	slow roasted chicken bites	1228		frozen/1 week	
Meat and poultry	69	roast chicken breasts	1228		frozen/1 week	
Meat and poultry	75	sliced chicken	1228		frozen/1 week	
Meat and poultry	3	smoky BBQ chicken	1228		frozen/1 week	
Meat and poultry	58	roast chicken thighs	1228		frozen/1 week	
Ready to eat foods	18	cheese and bacon quiche	1197		frozen/1 week	
Ready to eat foods	17	cheese and tomato pizza	1197		frozen/1 week	
Ready to eat foods	39	spaghetti bolognese	1197		frozen/1 week	
Ready to eat foods	13	cottage pie	1197		frozen/1 week	
Ready to eat foods	27	tuna pasta bake	1197		frozen/1 week	
Ready to eat foods	44	smoked salmon terrine	1208		aw 0.60/1h	0.48
Ready to eat foods	47	crab pate	1208		aw 0.60/1h	0.48
Ready to eat foods	43	smoked salmon pate	1208		aw 0.60/1h	0.48
Ready to eat foods	22	cooked peeled king prawns	1208		aw 0.60/1h	0.48
Ready to eat foods	5	smoked salmon	1208		aw 0.60/1h	0.48
Ready to eat foods	15	Melon and grapes	3098		chill/2 days	
Ready to eat foods	37	melon, grapes, kiwi, strawberry, pomegranate	3098		chill/2 days	
Ready to eat foods	6	sweet and crunchy salad	3098		chill/2 days	
Ready to eat foods	4	peppery salad	3098		chill/2 days	
Ready to eat foods	31	carrot batons	3098		chill/2 days	



Category	Codes	Item	Strain	Spiking	Seeding	Injury
Multi component foods	9	coleslaw	1234	pH2/ 60 min		0.57
Multi component foods	12	prawn cocktail	1234	pH2/ 60 min		0.57
Multi component foods	70	reduced fat potato salad	1234	pH2/ 60 min		0.57
Multi component foods	21	egg mayonnaise	1234	pH2/ 60 min		0.57
Multi component foods	57	chicken and sweetcorn	1234	pH2/ 60 min		0.57
Multi component foods	52	spaghetti bolognese	1238	55oC/5mins		0.48
Multi component foods	35	fish pie	1238	55oC/5mins		0.48
Multi component foods	14	macaroni cheese	1238	55oC/5mins		0.48
Dried/low moisture foods	82A	Infant rusks	1223		ambient/2 weeks	
Dried/low moisture foods	78A	bread sauce	1446		ambient/2 weeks	
Multi component foods	55B	prawn layered salad	natural			
Meat and poultry	1C	salami	3097		ambient/2 weeks	
Meat and poultry	28B	pork loin steak	natural			
Multi component foods	26B	Ploughman's sandwich	natural			
Multi component foods	41B	sweet chilli chicken noodle salad	natural			
Multi component foods	50B	mozzarella, sprouted pea, bean salad	natural			
Meat and poultry	61C	pepperoni	3097		ambient/2 weeks	
Ready to eat foods	15B	Melon and grapes	3098		chill/2 days	
Meat and poultry	11B	Diced beef	natural			
Meat and poultry	68C	mortadella ham	3097		ambient/2 weeks	
Meat and poultry	49C	cooked ham	3097		ambient/2 weeks	
Meat and poultry	7B	pork sausages	natural			
Meat and poultry	71C	chorizo	3097		ambient/2 weeks	
Multi component foods	40B	Chicken salad sandwich	natural			
Meat and poultry	59B	chicken breast	natural			
Meat and poultry	56B	beef mince	natural			
Multi component foods	73B	beef lasagne	1238	55oC/5mins		0.48



Category	Codes	Item	Strain	Spiking	Seeding	Iniury
Multi component foods	10B	tuna pasta bake	1238	55oC/5mins		0.48

ANNEX D: Calculation and interpretation of relative trueness

raw data relative trueness

Item (sample number)	Reference method						Alternative method			
	Dilution	count	cfu/g	Log cfu/g	confirm total	con. +ve	Dilution	count	cfu/g	Log cfu/g
chilled custard (72)	0.5 ml -1	5	100	2.00	5	5	-1	13	125	2.10
	0.5ml -1	5			5	5	-1	12		
	0.1ml -1	0					-2	2		
strawberry trifle (48)	0.5 ml -1	55	1.20E+03	3.08	2	2	-1	NT	8.70E+02	2.94
	0.5ml -1	86			3	3	-1	86		
	0.1ml -1	10			5	5	-2	10		
	-2	3			3	3	-3	0		
	-3	0			0	0	-4	0		
Cream (8)	0.5 ml -1	T	4.50E+03	3.65			-1	T	3.90E+03	3.59
	0.5ml -1	T					-1	T		
	0.1ml -1	39			5	5	-2	38		
	-2	10			5	5	-3	5		
	-3	1					-4	0		
ice cream (38)	0.5 ml -1	NT	2.10E+05	5.32			-1	NT	1.10E+05	5.04
	0.5ml -1	NT					-1	NT		
	0.1ml -1	NT					-2	T		
	-2	T					-3	113		
	-3	19			5	5	-4	12		
	-4	4			4	4	-5	1		
custard slice (62)	0.5 ml -1	NT	3.60E+06	6.56			-1	NT	2.50E+06	6.40
	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	T					-4	T		
	-4	35			4	4	-5	25		
	-5	4			4	4	-6	NT		
Greek style yogurt (60)	0.5 ml -1	22	675	2.83	3	5	-1	11	110	2.04
	0.5ml -1	33			2	2	-1	0		
	0.1ml -1	8			5	5	-2	0		
	-2	0					-3	0		
low fat natural yogurt (36)	0.5 ml -1	T	9.40E+03	3.97			-1	NT	1.90E+03	3.28
	0.5ml -1	T					-1	NT		
	0.1ml -1	94			5	5	-2	19		
	-2	9			5	5	-3	1		
	-3	2			2	2	-4			
banana milk (54)	0.5 ml -1	NT	6.40E+04	4.81			-1		1.80E+04	4.26
	0.5ml -1	NT					-1	T		
	0.1ml -1	NT					-2	T		
	-2	59			5	5	-3	18		
	-3	11			5	5	-4	0		
chocolate milk (33)	0.5 ml -1	NT	7.20E+05	5.86			-1	NT	2.40E+05	5.38
	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	71			5	5	-4	24		
	-4	8			5	5	-5	0		

Item (sample number)	Reference method						Alternative method			
	Dilution	count	cfu/g	Log cfu/g	confirm total	con. +ve	Dilution	count	cfu/g	Log cfu/g
peaches and cream	0.5 ml -1	NT	6.90E+06	6.84			-1	NT	1.10E+06	6.04
Yogurt (32)	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	T					-4	T		
	-4	72			5	5	-5	11		
	-5	4			4	4	-6	NT		
Full fat soft cheese	0.5 ml -1	6	500	2.70			-1	NT	170	2.23
(53)	0.5ml -1	18					-1	17		
	0.1ml -1	5			5	5	-2	2		
	-2	0					-3	0		
Double Gloucester	0.5 ml -1	T	3.60E+03	3.56			-1	NT	1.70E+03	3.23
(51)	0.5ml -1	T					-1	129		
	0.1ml -1	38			5	5	-2	17		
	-2	1			1	1	-3	1		
	-3	1			1	1	-4	0		
Blue Stilton (2)	0.5 ml -1	T	2.70E+04	4.43			-1	NT	2.50E+04	4.40
	0.5ml -1	T					-1	T		
	0.1ml -1	T					-2	T		
	-2	28			5	5	-3	25		
	-3	2			2	2	-4	2		
President Brie (24)	0.5 ml -1	NT	3.70E+05	5.57			-1	NT	2.90E+05	5.46
	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	39			5	5	-4	28		
	-4	2			2	2	-5	4		
Raw Ewes milk cheese	0.5 ml -1	NT	4.60E+06	6.66			-1	NT	3.30E+06	6.52
(60)	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	T					-4	T		
	-4	45			5	5	-5	33		
	-5	6			5	5	-6	0		
Cherry tomato and	0.5 ml -1	68	1.40E+03	3.15	10	10	-1	80	1.50E+03	3.18
Mozarella pasta (45)	0.5ml -1	89					-1	71		
	0.1ml -1	13			5	5	-2	13		
	-2	4			4	4	-3	0		
Chicken and bacon	0.5 ml -1	T	1.10E+04	4.04			-1	NT	1.00E+04	4.00
Tortellini (20)	0.5ml -1	T					-1	T		
	0.1ml -1	117			5	5	-2	103		
	-2	5			5	5	-3	9		
	-3	0					-4	0		
spinach and ricotta	0.5 ml -1	T	7.90E+04	4.90			-1	NT	9.10E+04	4.96
Tortellini (67)	0.5ml -1	T					-1	T		
	0.1ml -1	T					-2	T		
	-2	77			5	5	-3	92		
	-3	10			5	5	-4	8		
italian sausage and ham	0.5 ml -1	NT	1.20E+06	6.08			-1	NT	1.20E+06	6.08

Item (sample number)	Reference method						Alternative method			
	Dilution	count	cfu/g	Log cfu/g	confirm total	con. +ve	Dilution	count	cfu/g	Log cfu/g
Tortellini (23)	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	110			5	5	-4	119		
	-4	19			5	5	-5	13		
Pilau rice (25)	0.5 ml -1	NT	8.10E+06	6.91			-1	NT	8.40E+06	6.92
	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	T					-4	T		
	-4	88			5	5	-5	84		
	-5	1			1	1	-6	0		
Beba optipro infant milk (63)	0.5 ml -1	0	20	1.30			-1	2	25	1.40
	0.5ml -1	2			2	2	-1	3		
	0.1ml -1	NT					-2	0		
Nan pro biotic infant Milk (34)	0.5 ml -1	47	1.90E+03	3.28	3	3	-1	NT	1.20E+03	3.08
	0.5ml -1	50			2	2	-1	117	1.20E+03	
	0.1ml -1	16			5	5	-2	11		
	-2	5					-3	1		
cerelac infant cereal probiotic (30)	0.5 ml -1	T	6.40E+03	3.81			-1	NT	5.20E+03	3.72
	0.5ml -1	T					-1	T		
	0.1ml -1	61			5	5	-2	47		
	-2	9			5	5	-3	10		
	-3	2					-4	0		
cerelac infant cereal probiotic (64)	0.5 ml -1	NT	8.80E+03	3.94			-1	NT	4.70E+03	3.67
	0.5ml -1	NT					-1	NT		
	0.1ml -1	93			5	5	-2	45		
	-2	5			5	4	-3	7		
	-3	0					-4	0		
infant cereal 5 grain probiotic (74)	0.5 ml -1	NT	1.00E+05	5.00			-1	NT	8.00E+04	4.90
	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	NT		
	-2	103			5	5	-3	NT		
	-3	9			5	5	-4	8		
skimmed milk powder (46)	-4	0					-5	2		
	0.5 ml -1	42	740	2.87			-1	NT	3.00E+02	2.48
	0.5ml -1	32					-1	NT		
	0.1ml -1	10					-2	3		
vegetable soup in a mug (19)	-2	2			5	5	-3	0		
	0.5 ml -1	T	7.60E+03	3.88			-1	NT	4.30E+03	3.63
	0.5ml -1	T					-1	T		
	0.1ml -1	75			5	5	-2	43		
	-2	9			5	5	-3	4		
cheddar cheese sauce (29)	-3	1					-4	0		
	0.5 ml -1	NT	1.10E+05	5.04			-1	NT	8.90E+04	4.95
	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	NT		
	-2	102			5	5	-3	93		
	-3	14			5	5	-4	5		

Item (sample number)	Reference method						Alternative method			
	Dilution	count	cfu/g	Log cfu/g	confirm total	con. +ve	Dilution	count	cfu/g	Log cfu/g
parsley sauce	0.5 ml -1	NT	9.80E+05	5.99			-1	NT	8.10E+05	5.91
(42)	0.5ml -1	NT					-1	NT		
	0.1ml -1	NT					-2	T		
	-2	T					-3	T		
	-3	101			5	5	-4	82		
	-4	7			5	5	-5	7		
slow roasted chicken	0.5 ml -1	3	60	1.78	2	2	-1	3	70	1.85
Bites (69)	0.5ml -1	3			3	3	-1	4		
	0.1ml -1	0			1	1	-2	0		
roast chicken breasts	0.5 ml -1	41	515	2.71	3	3	-1	NT	6.20E+02	2.79
(69)	0.5ml -1	32			2	2	-1	59		
	0.1ml -1	3			3	3	-2	9		
	-2	1					-3	1		
	-3	0					-4	NT		
sliced chicken	0.5 ml -1	T	1.10E+04	4.04			-1	NT	1.00E+04	4.00
(75)	0.5ml -1	T					-1	T		
	0.1ml -1	112			5	5	-2	102		
	-2	13			5	5	-3	8		
	-3	1					-4	1		
smoky BBQ chicken	0.5 ml -1	NT	8.50E+04	4.93			-1	NT	1.10E+05	5.04
(3)	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	86			5	5	-3	108		
	-3	7			5	5	-4	13		
	-4	2			2	2	-5	1		
roast chicken thighs	0.5 ml -1	NT	1.40E+06	6.15			-1	NT	1.20E+06	6.08
(58)	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	178			5	5	-4	128		
	-4	14			5	5	-5	9		
	-5	0					-6	0		
cheese and bacon	0.5 ml -1	7	120	2.08	3	3	-1	10	1.00E+02	2.00
quiche (18)	0.5ml -1	5			2	2	-1	10		
	0.1ml -1	2			2	2	-2	2		
	-2	0					-3			
	-3	NT					-4			
cheese and tomato	0.5 ml -1	T	3.40E+03	3.53			-1	NT	1.90E+03	3.28
pizza (17)	0.5ml -1	T					-1	T		
	0.1ml -1	35			5	5	-2	19		
	-2	2			2	2	-3	2		
	-3	1					-4	NT		
spaghetti bolognese	0.5 ml -1	T	1.50E+04	4.18			-1	NT	1.40E+04	4.15
(39)	0.5ml -1	T					-1	T		
	0.1ml -1	165					-2	142		
	-2	16			5	5	-3	12		
	-3	1			1	1	-4	1		
cottage pie (13)	0.5 ml -1	T	3.80E+05	5.58			-1	NT	2.70E+05	5.43
	0.5ml -1	T					-1	NT		

Item (sample number)	Reference method						Alternative method			
	Dilution	count	cfu/g	Log cfu/g	confirm total	con. +ve	Dilution	count	cfu/g	Log cfu/g
	0.1ml -1	38			5	5	-2	T		
	-2	4			4	4	-3	T		
	-3	NT					-4	27		
	-4	NT					-5	3		
tuna pasta bake (27)	0.5 ml -1	NT	1.80E+06	6.26			-1	NT	1.00E+06	6.00
	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	198					-4	T		
	-4	17			5	5	-5	10		
	-5	3			3	3				
smoked salmon terrine (44)	0.5 ml -1	38	1.30E+03	3.11	2	2	-1	108	1.10E+03	3.04
	0.5ml -1	53			3	3	-1	99		
	0.1ml -1	16			5	5	-2	12		
	-2	2			2	1	-3	NT		
	-3	NT					-4	NT		
crab pate (47)	0.5 ml -1	T	9.20E+03	3.96			-1	NT	6.10E+03	3.79
	0.5ml -1	T					-1	T		
	0.1ml -1	94			5	5	-2	59		
	-2	7			5	5	-3	8		
	-3	2			2	2	-4	NT		
smoked salmon pate (43)	0.5 ml -1	T	9.80E+04	4.99			-1	NT	8.00E+04	4.90
	0.5ml -1	T					-1	T		
	0.1ml -1	T					-2	T		
	-2	100			5	5	-3	81		
	-3	8			5	5	-4	7		
cooked peeled king (22)	0.5 ml -1	NT	1.40E+06	6.15			-1	NT	8.60E+05	5.93
	0.5ml -1	NT					-1	T		
	0.1ml -1	T					-2	T		
	-2	T					-3	85		
	-3	136			5	5	-4	10		
	-4	13			5	5		NT		
smoked salmon (5)	0.5 ml -1	NT	1.20E+07	7.08			-1	NT	5.30E+06	6.72
	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	T					-4	T		
	-4	119			5	5	-5	53		
	-5	11			5	5	-6	NT		
Fruit mix (melon, grapes, kiwi ,strawberry (15)	0.5 ml -1	134	2.80E+03	3.45			-1		2.10E+03	3.32
	0.5ml -1	124					-1	T		
	0.1ml -1	28			5	5	-2	21		
	-2	3			3	3	-3	2		
sweet and crunchy Salad (6)	0.5 ml -1	T	2.60E+04	4.41			-1		2.60E+04	4.41
	0.5ml -1	T					-1	T		
	0.1ml -1	T					-2	T		
	-2	27			5	5	-3	26		
	-3	1			1	1	-4	1		
peppery salad (4)	0.5 ml -1	NT	1.20E+05	5.08			-1	NT	1.70E+05	5.23

Item (sample number)	Reference method						Alternative method			
	Dilution	count	cfu/g	Log cfu/g	confirm total	con. +ve	Dilution	count	cfu/g	Log cfu/g
	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	124			5	5	-3	81		
	-3	12			5	5	-4	17		
	-4	2			2	2	-5	3		
carrot batons (31)	0.5 ml -1	NT	3.00E+05	5.48			-1	NT	2.10E+05	5.32
	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	30			5	5	-4	22		
	-4	3			3	3	-5	1		
Coleslaw (9)	0.5 ml -1	41	935	2.97	3	3	-1	53	6.20E+02	2.79
	0.5ml -1	36			2	2	-1	73		
	0.1ml -1	11			5	5	-2	5		
	-2	0					-3	NT		
prawn cocktail (12)	0.5 ml -1	T	5.90E+03	3.77			-1	NT	3.60E+03	3.56
	0.5ml -1	T					-1	T		
	0.1ml -1	60			5	5	-2	T		
	-2	5			5	5	-3	37		
	-3	3			3	3	-4	2		
reduced fat potato Salad (70)	0.5 ml -1	T	7.60E+04	4.88			-1	NT	2.20E+04	4.34
	0.5ml -1	T					-1	T		
	0.1ml -1	T					-2	T		
	-2	76			5	5	-3	22		
	-3	8			5	5	-4	2		
egg mayonnaise (21)	0.5 ml -1	NT	8.60E+05	5.93			-1	NT	4.70E+05	5.67
	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	85			5	5	-4	46		
	-4	9			5	5	-5	6		
chicken and sweetcorn (57)	0.5 ml -1	NT	8.20E+06	6.91			-1	NT	3.60E+06	6.56
	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	T					-4	T		
	-4	82			5	5	-5	36		
	-5	8			5	5	-6	NT		
spaghetti bolognese (52)	0.5 ml -1	17	250	2.40	3	3	1	11	1.10E+02	2.04
	0.5ml -1	8			2	2	-1	1		
	0.1ml -1	2			2	2	-2	0		
	-2	0					-3	0		
fish pie (35)	0.5 ml -1	NT	1.30E+04	4.11	5	5	-1	NT	1.00E+03	3.00
	0.5ml -1	NT			5	5	-1	NT		
	0.1ml -1	132			2	2	-2	10		
	-2	7					-3	1		
	-3	2					-4	0		
macaroni cheese (14)	0.5 ml -1		8.30E+04	4.92			-1		1.20E+04	4.08
	0.5ml -1	NT					-1	NT		

Item (sample number)	Reference method						Alternative method			
	Dilution	count	cfu/g	Log cfu/g	confirm total	con. +ve	Dilution	count	cfu/g	Log cfu/g
	0.1ml -1	T					-2	78		
	-2	83			5	5	-3	12		
	-3	10			5	5	-4	0		
Infant rusks (82A)	0.5 ml -1	T	2.00E+04	4.30	5	5	-1	T	1.00E+04	4.00
	0.5ml -1	T			5	5	-1	T		
	0.1ml -1	T					-2	105		
	-2	20					-3	6		
	-3	2					-4	2		
bread sauce (78A)	0.5 ml -1	42	8.65E+02	2.94			-1		3.60E+02	2.56
	0.5ml -1	41					-1	35		
	0.1ml -1	9					-2	5		
	-2	NT					-3	1		
prawn layered salad (55B)	0.5 ml -1	NT	2.10E+06	6.32			-1	NT	1.10E+06	6.04
	0.5ml -1	NT					-1			
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	193					-4	100		
	-4	21			5	5	-5	18		
Salami (14)	0.5 ml -1	T	3.10E+04	4.49			-1	NT	9.10E+03	3.96
	0.5ml -1	T					-1	NT		
	0.1ml -1	204					-2	91		
	-2	32			5	5	-3	9		
	-3	2			2	2	-4	1		
pork loin steak (28B)	0.5 ml -1	91	2.00E+03	3.30		3	-1	NT	1.90E+03	3.28
	0.5ml -1	62				2	-1	147		
	0.1ml -1	19				5	-2	19		
	-2	3				3	-3	2		
	-3	0					-4	NT		
Ploughmans sandwich	0.5 ml -1	T	6.20E+03	3.79			-1	NT	5.40E+03	3.73
	0.5ml -1	T					-1	T		
	0.1ml -1	61			5	5	-2	50		
	-2	7			5	5	-3	9		
sweet chilli chicken	0.5 ml -1	NT	2.80E+04	4.45			-1	NT	2.60E+04	4.41
noodle salad (41B)	0.5ml -1	NT					-1	NT		
	0.1ml -1	160					-2	122		
	-2	28			5	5	-3	25		
	-3	3			3	3	-4	3		
mozarella, pea and Bean salad ((50B)	0.5 ml -1		2.10E+05	5.32			-1	T	1.90E+05	5.28
	0.5ml -1						-1	T		
	0.1ml -1						-2	129		
	-2	152			5	5	-3	19		
	-3	18			5	5	-4	2		
	-4	5			5	5	-5	NT		
Pepperoni (61C)	0.5 ml -1	61	2.70E+03	3.43			-1	T	2.60E+03	3.41
	0.5ml -1	88					-1	24		
	0.1ml -1	27			5	5	-2	4		
	-2	3			3	3	-3	NT		
Melon and grapes (15)	0.5 ml -1	159	4.50E+03	3.65			-1	T	3.00E+03	3.48
	0.5ml -1	132					-1	T		

Item (sample number)	Reference method						Alternative method			
	Dilution	count	cfu/g	Log cfu/g	confirm total	con. +ve	Dilution	count	cfu/g	Log cfu/g
	0.1ml -1	42			5	5	-2	30		
	-2	7			5	5	-3			
Diced beef (11B)	0.5 ml -1	6	130	2.11	2	2	-1	17	1.80E+02	2.26
	0.5ml -1	7			3	3	-1	18		
	0.1ml -1	1			1	1	-2	2		
mortadella ham (68C)	0.5 ml -1	NT	7.30E+05	5.86			-1	NT	5.50E+05	5.74
	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	70			5	5	-4	53		
	-4	10			5	5	-5	7		
cooked ham (49C)	0.5 ml -1	35	765	2.88	3	3	-1	70	7.10E+02	2.85
	0.5ml -1	38			3	3	-1	68		
	0.1ml -1	8			5	5	-2	10		
pork sausages (7B)	0.5 ml -1	T	1.90E+04	4.28			-1	NT	8.60E+03	3.93
	0.5ml -1	T					-1	T		
	0.1ml -1	20			5	5	-2	81		
	-2	1			1	1	-3	13		
Chorizo (71C)	0.5 ml -1	NT	1.40E+06	6.15			-1	NT	7.70E+05	5.89
	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	137			5	5	-4	79		
	-4	12			5	5	-5	6		
	-5	2			2	2				
Chicken salad sandwich (40B)	0.5 ml -1	29	425	2.63	5	5	-1	57	5.90E+02	2.77
	0.5ml -1	26					-1	62		
	0.1ml -1	3			3	3	-2	4		
chicken breast (59B)	0.5 ml -1	NT	4.10E+05	5.61			-1	NT	2.50E+05	5.40
	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	44			5	5	-4	24		
	-4	1			1	1	-5	3		
beef mince (56B)	0.5 ml -1	NT	2.10E+06	6.32			-1	NT	1.30E+06	6.11
	0.5ml -1	NT					-1	NT		
	0.1ml -1	T					-2	T		
	-2	T					-3	T		
	-3	169					-4	125		
	-4	21			5	5	-5	15		
beef lasagne (73B)	0.5 ml -1	NT	5.70E+03	3.76			-1	NT	5.60E+03	3.75
	0.5ml -1	NT					-1	NT		
	0.1ml -1	61			5	5	-2	55		
	-2	2			2	2	-3	7		
	-3	0					-4	1		
tuna pasta bake (10B)	0.5 ml -1	NT	2.80E+04	4.45			-1	T	1.70E+04	4.23
	0.5ml -1	NT					-1	T		
	0.1ml -1	T					-2	156		
	-2	28					-3	17		

Item (sample number)	Reference method						Alternative method			
	Dilution	count	cfu/g	Log cfu/g	confirm total	con. +ve	Dilution	count	cfu/g	Log cfu/g
	-3	0			5	5	-4	NT		

Calculation and interpretation of relative trueness

Type	Item	Sample code	log(Ref)	log(Alt)	Mean	Difference
Dairy						
Cheese	Full fat soft cheese (Philadelphia)	53	2.70	2.23	2.46	-0.47
Cheese	Double Gloucester	51	3.56	3.23	3.39	-0.33
Cheese	Blue Stilton	2	4.43	4.40	4.41	-0.03
Cheese	President Brie	24	5.57	5.46	5.52	-0.11
Desserts	chilled custard	72	2.00	2.10	2.05	0.10
Desserts	strawberry trifle	48	3.08	2.94	3.01	-0.14
Desserts	cream	8	3.65	3.59	3.62	-0.06
Desserts	ice cream	38	5.32	5.04	5.18	-0.28
Desserts	custard slice	62	6.56	6.40	6.48	-0.16
Pasteurised/raw milk products	Greek style yogurt	66	2.83	2.04	2.44	-0.79
Pasteurised/raw milk products	low fat natural yogurt	36	3.97	3.28	3.63	-0.69
Pasteurised/raw milk products	banana milk	54	4.81	4.26	4.53	-0.55
Pasteurised/raw milk products	chocolate milk	33	5.86	5.38	5.62	-0.48
Pasteurised/raw milk products	peaches and cream yogurt	32	6.84	6.04	6.44	-0.80
Raw milk cheese	Raw Ewes milk cheese	60	6.66	6.52	6.59	-0.14
Dried/low moisture foods						

Type	Item	Sample code	log(Ref)	log(Alt)	Mean	Difference
Chilled RTC batters and pasta	Cherry tomato and buffalo milk mozzarella ravioli	45	3.15	3.18	3.16	0.03
Chilled RTC batters and pasta	Chicken and bacon tortellini	20	4.04	4.00	4.02	-0.04
Chilled RTC batters and pasta	spinach and ricotta tortellini	67	4.90	4.96	4.93	0.06
Chilled RTC batters and pasta	italian sausage and ham tortellini	23	6.08	6.08	6.08	0.00
Chilled RTC batters and pasta	Pilau rice	25	6.91	6.92	6.92	0.02
dehydrated powders	skimmed milk powder	46	2.87	2.48	2.67	-0.39
dehydrated powders	vegetable soup in a mug	19	3.88	3.63	3.76	-0.25
dehydrated powders	cheddar cheese sauce	29	5.04	4.95	5.00	-0.09
dehydrated powders	parsley sauce	42	5.99	5.91	5.95	-0.08
dehydrated powders	bread sauce	78A	2.94	2.56	2.75	-0.38
infant formula/cereals	Beba optipro infant milk pro-biotic	63	1.30	1.40	1.35	0.10
infant formula/cereals	Nan pro biotic infant milk	34	3.28	3.08	3.18	-0.20
infant formula/cereals	cerelac infant cereal pro biotic gluten free	30	3.81	3.72	3.76	-0.09
infant formula/cereals	cerelac infant cereal pro biotic	64	3.94	3.67	3.81	-0.27

Type	Item	Sample code	log(Ref)	log(Alt)	Mean	Difference
infant formula/cereals	infant cereal 5 grain pro biotic	74	5.00	4.90	4.95	-0.10
infant formula/cereals	Infant rusks	82A	4.30	4.00	4.15	-0.30
Environmental						
Dust	Industrial kitchen sink corner	104	6.68	6.68	6.68	0.00
Dust	Radiator	E21	2.40	1.93	2.16	-0.47
Dust	Oven top	E22	3.45	2.90	3.18	-0.54
Dust	Base of equipment	E23	4.38	3.88	4.13	-0.51
Dust	Bakery sink corner	E24	5.26	4.73	4.99	-0.52
Process water	Cooling water	99	1.64	1.67	1.66	0.03
Process water	Wash water	E16	2.71	2.72	2.72	0.01
Process water	Bakery prep area	E17	3.68	3.74	3.71	0.06
Process water	Surface run off - industrial kitchen	E18	4.52	4.73	4.63	0.21
Process water	High pressure cooling water	E19	5.51	5.68	5.59	0.18
Surfaces (wipes, swabs)	Plastic chopping board	4A	3.83	3.65	3.74	-0.18
Surfaces (wipes, swabs)	Ceramic - sink splashback	E12	2.28	1.95	2.12	-0.32
Surfaces (wipes, swabs)	Rubber - equipment piping	E13	3.28	2.86	3.07	-0.42
Surfaces (wipes, swabs)	Plastic - equipment surface	E14	4.04	3.92	3.98	-0.12

Type	Item	Sample code	log(Ref)	log(Alt)	Mean	Difference
Surfaces (wipes, swabs)	MDF - lab bench	E15	5.23	5.08	5.15	-0.15
Meat and poultry						
cooked and fermented meat	salami	1C	3.49	3.96	3.73	0.47
cooked and fermented meat	pepperoni	61C	3.43	3.41	3.42	-0.02
cooked and fermented meat	mortadella ham	68C	5.86	5.74	5.80	-0.12
cooked and fermented meat	cooked ham	49C	2.88	2.85	2.87	-0.03
cooked and fermented meat	chorizo	71C	6.15	5.89	6.02	-0.26
cooked poultry	slow roasted chicken bites	16	1.78	1.85	1.81	0.07
cooked poultry	roast chicken breasts	69	2.71	2.79	2.75	0.08
cooked poultry	sliced chicken	75	4.04	4.00	4.02	-0.04
cooked poultry	smoky BBQ chicken	3	4.93	5.04	4.99	0.11
cooked poultry	roast chicken thighs	58	6.15	6.08	6.11	-0.07
raw meat	pork loin steak	28B	3.30	2.28	2.79	-1.02
raw meat	Diced beef	11B	2.11	2.26	2.18	0.14
raw meat	pork sausages	7B	4.28	3.93	4.11	-0.34
raw meat	chicken breast	59B	5.61	5.40	5.51	-0.21
raw meat	beef mince	56B	6.32	6.11	6.22	-0.21
Multi component foods						

Type	Item	Sample code	log(Ref)	log(Alt)	Mean	Difference
composite processed meals	spaghetti bolognese	52	2.40	2.04	2.22	-0.36
composite processed meals	fish pie	35	4.11	3.00	3.56	-1.11
composite processed meals	macaroni cheese	14	4.92	4.08	4.50	-0.84
composite processed meals	beef lasagne	73B	3.76	3.75	3.75	-0.01
composite processed meals	tuna pasta bake	10B	5.45	4.23	4.84	-1.22
composite with raw ingredients	prawn layered salad	55B	6.32	6.04	6.18	-0.28
composite with raw ingredients	Polughmans sandwich	26B	3.79	3.73	3.76	-0.06
composite with raw ingredients	sweet chilli chicken noodle salad	41B	3.45	4.41	3.93	0.97
composite with raw ingredients	mozarella, sprouted pea, bean salad	50B	5.32	5.28	5.30	-0.04
composite with raw ingredients	Chicken salad sandwich	40B	2.63	2.77	2.70	0.14
mayonnaise based salads	coleslaw	9	2.97	2.79	2.88	-0.18
mayonnaise based salads	prawn cocktail	12	3.77	3.56	3.66	-0.21
mayonnaise based salads	reduced fat potato salad	70	4.88	4.34	4.61	-0.54
mayonnaise based salads	egg mayonnaise	21	5.93	5.67	5.80	-0.26

Type	Item	Sample code	log(Ref)	log(Alt)	Mean	Difference
mayonnaise based salads	chicken and sweetcorn	57	6.91	6.56	6.74	-0.36
Pet food and animal feed						
Animal feeds (poultry and fish)	Organic mixed corn for chickens	S11	4.32	4.28	4.30	-0.04
Animal feeds (poultry and fish)	Chicken oyster shell supplement	S12	3.74	3.54	3.64	-0.20
Animal feeds (poultry and fish)	Aquacare goldfish flakes with mealworms	S13	2.78	2.49	2.64	-0.29
Animal feeds (poultry and fish)	King British Tropical fish mini pellets	12	2.39	2.15	2.27	-0.24
Animal feeds (poultry and fish)	Chicken feed - corn	14	6.28	5.74	6.01	-0.54
Animal feeds (poultry and fish)	Organic mixed corn for chickens	22hR8	4.74	4.64	4.69	-0.10
Animal feeds (poultry and fish)	King British (API) Tropical fish mini pellets	22hR9	3.81	3.53	3.67	-0.28
Animal feeds (poultry and fish)	Love fish shrimp + snail	22hR10	6.75	6.36	6.55	-0.39
Animal feeds (poultry and fish)	Organic mixed corn for chickens	44hR8	4.74	4.72	4.73	-0.02
Animal feeds (poultry and fish)	King British (API) Tropical fish mini pellets	44hR9	3.81	3.60	3.71	-0.21
Animal feeds (poultry and fish)	Love fish shrimp + snail	44hR10	6.75	6.46	6.61	-0.29
Dry food	complete dry kitten food turkey and rice	S1	4.63	4.62	4.63	-0.01

Type	Item	Sample code	log(Ref)	log(Alt)	Mean	Difference
Dry food	complete adult dry cat food turkey and rice	S2	4.15	4.04	4.09	-0.10
Dry food	Feline health dry kitten food	S3	3.89	3.70	3.79	-0.19
Dry food	complete natural and small breed dry adult dog food lamb and rice	S4	3.48	3.11	3.30	-0.36
Dry food	mature dog biscuit bones	4	4.81	4.53	4.67	-0.27
Dry food	mature dog biscuit bones	22h R1	4.71	4.45	4.58	-0.26
Dry food	cat treats with chicken, liver and turkey	22hR2	2.69	2.34	2.51	-0.34
Dry food	complete natural and small breed dry adult dog food lamb and rice	22hR3	6.65	6.08	6.37	-0.57
Dry food	mature dog biscuit bones	44h R1	4.71	4.70	4.70	-0.01
Dry food	cat treats with chicken, liver and turkey	44hR2	2.69	2.67	2.68	-0.01
Dry food	complete natural and small breed dry adult dog food lamb and rice	44hR3	6.65	6.40	6.53	-0.26
Wet food (raw and canned)	Wainwright's complete nutrition dry puppy food chicken with vegetables	S6	5.94	5.49	5.72	-0.45
Wet food (raw and canned)	Applaws Tuna fillet natural cat food	9	4.81	4.59	4.70	-0.22
Wet food (raw and canned)	Wainwright's wet adult dog food lamb with brown rice	S8	4.64	4.15	4.39	-0.50
Wet food (raw and canned)	Pets at home deliciously tasty luxury mousse wet	S9	3.48	3.04	3.26	-0.44

Type	Item	Sample code	log(Ref)	log(Alt)	Mean	Difference
and canned)	adult cat food salmon					
Wet food (raw and canned)	Purina gourmet cat food - mouse with salmon and cascading gravy	6	2.57	2.56	2.56	-0.01
Wet food (raw and canned)	complete nutrition puppy food chicken with vegetables	22hR4	3.54	3.40	3.47	-0.15
Wet food (raw and canned)	wet adult dog food lamb with brown rice	22hR5	4.48	4.34	4.41	-0.13
Wet food (raw and canned)	deliciously tasty luxury mousse wet adult cat food salmon	22hR6	6.32	6.11	6.22	-0.21
Wet food (raw and canned)	gourmet mon pet con sardine	22hR7	6.86	6.54	6.70	-0.32
Wet food (raw and canned)	complete nutrition puppy food chicken with vegetables	44hR4	3.54	3.46	3.50	-0.08
Wet food (raw and canned)	wet adult dog food lamb with brown rice	44hR5	4.48	4.36	4.42	-0.12
Wet food (raw and canned)	deliciously tasty luxury mousse wet adult cat food salmon	44hR6	6.32	6.26	6.29	-0.07
Wet food (raw and canned)	gourmet mon pet con sardine	44hR7	6.86	6.65	6.76	-0.21
Ready to eat foods						
cooked cured fish	tuna pasta bake	27	3.11	3.04	3.08	-0.07
cooked cured fish	smoked salmon terrine	44	3.96	3.79	3.87	-0.18
cooked cured fish	crab pate	47	4.99	4.90	4.95	-0.09

Type	Item	Sample code	log(Ref)	log(Alt)	Mean	Difference
cooked cured fish	smoked salmon pate	43	6.15	5.93	6.04	-0.21
cooked cured fish	cooked peeled king prawns	22	7.08	6.72	6.90	-0.35
cut RTE produce	smoked salmon	5	1.95	1.54	1.75	-0.41
cut RTE produce	Melon and grapes	15	3.45	3.32	3.38	-0.12
cut RTE produce	melon, grapes,kiwi,strawberry, pomegranate	37	3.65	3.48	3.57	-0.18
cut RTE produce	Melon and grapes	15B	4.41	4.41	4.41	0.00
cut RTE produce	peppery salad	4	5.08	5.23	5.15	0.15
cut RTE produce	carrot batons	31	5.48	5.32	5.40	-0.15
RTE/RTH chilled or frozen	cheese and bacon quiche	18	2.08	2.00	2.04	-0.08
RTE/RTH chilled or frozen	cheese and tomato pizza	17	3.53	3.28	3.41	-0.25
RTE/RTH chilled or frozen	spaghetti bolognese	39	4.18	4.15	4.16	-0.03
RTE/RTH chilled or frozen	cottage pie	13	5.58	5.43	5.51	-0.15
RTE/RTH chilled or frozen	tuna pasta bake	27	6.26	6.00	6.13	-0.26

Key

repeat 22h incubated samples highlighted in blue

repeat 22h incubated samples highlighted in green

ANNEX E: Calculation and interpretation of accuracy profile

Raw data accuracy profile study

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Pastrami –Low a	-1	107			0.5 ml -1	56			3	3
Pastrami –Low a	-1	112			0.5ml -1	55			2	2
Pastrami –Low a	-2	11			0.1ml -1	19			3	3
Pastrami –Low a	-3	0	1100	3.04	0.1ml -1	13			2	2
Pastrami –Low a	*				-2	3	1600	3.20		
Pastrami – Low b	-1	139			0.5 ml -1	42			3	3
Pastrami – Low b	-1	116			0.5ml -1	44			2	2
Pastrami – Low b	-2	12			0.1ml -1	15			3	3
Pastrami – Low b	-3	1	1300	3.11	0.1ml -1	13			2	2
Pastrami – Low b	*				-2	3	1600	3.20		
Pastrami – Low c	-1	129			0.5 ml -1	54			3	3
Pastrami – Low c	-1	121			0.5ml -1	38			2	2
Pastrami – Low c	-2	9			0.1ml -1	11			3	3
Pastrami – Low c	-3	2	1200	3.08	0.1ml -1	23			2	2
Pastrami – Low c	*				-2	1	1700	3.23		
Pastrami – low d	-1	83			0.5 ml -1	84			3	3
Pastrami – low d	-1	93			0.5ml -1	49			2	2
Pastrami – low d	-2	9			0.1ml -1	16			3	3
Pastrami – low d	-3	0	880	2.94	0.1ml -1	16			2	2
Pastrami – low d	*				-2	0	1600	3.20		
Pastrami – low e	-1	150			0.5 ml -1	67			3	3
Pastrami – low e	-1	127			0.5ml -1	70			2	2
Pastrami – low e	-2	16			0.1ml -1	12			3	3
Pastrami – low e	-3	3	1400	3.15	0.1ml -1	21			2	2
Pastrami – low e	*				-2	0	1700	3.23		
Pastrami – med a	-1	T			*					
Pastrami – med a	-1	T			*					
Pastrami – med a	-2	T			0.1ml -1	210				
Pastrami – med a	-3	30			0.1ml -1	214				
Pastrami – med a	-4	2	29000	4.46	-2	32			5	5
Pastrami – med a	*				-3	2	31000	4.49	2	2
Pastrami –med b	-1	T			*					
Pastrami –med b	-1	T			*					
Pastrami –med b	-2	161			0.1ml -1	238				

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Pastrami –med b	-3	17			0.1ml -1	244				
Pastrami –med b	-4	2	17000	4.23	-2	20			5	5
Pastrami –med b	*				-3	2	20000	4.30	2	2
Pastrami –med c	-1	T			*					
Pastrami –med c	-1	T			*					
Pastrami –med c	-2	310			0.1ml -1	258				
Pastrami –med c	-3	26	26000	4.41	0.1ml -1	296				
Pastrami –med c	-4	2			-2	28			5	5
Pastrami –med c	*				-3	1	26000	4.41	1	1
Pastrami –med d	-1	T			*					
Pastrami –med d	-1	T			*					
Pastrami –med d	-2	201			0.1ml -1	T				
Pastrami –med d	-3	16			0.1ml -1	T				
Pastrami –med d	-4	1	16000	4.20	-2	27			5	5
Pastrami –med d	*				-3	1	26000	4.41	1	1
Pastrami –med e	-1	T			*					
Pastrami –med e	-1	T			*					
Pastrami –med e	-2	209			0.1ml -1	203				
Pastrami –med e	-3	28			0.1ml -1	290				
Pastrami –med e	-4	0	28000	4.45	-2	31			5	5
Pastrami –med e	*				-3	6	34000	4.53	5	5
Pastrami – high a	-3	T			*					
Pastrami – high a	-4	218			*					
Pastrami – high a	-5	26	2600000	6.41	-2	T				
Pastrami – high a	*				-3	186			5	5
Pastrami – high a	*				-4	25	250000	6.40	5	5
Pastrami – high b	-3	T			*					
Pastrami – high b	-4	T			*					
Pastrami – high b	-5	27	2700000	6.43	-2	T				
Pastrami – high b	*				-3	228			5	5
Pastrami – high b	*				-4	24	240000	6.38	5	5
Pastrami – high c	-3	T			*					
Pastrami – high c	-4	113			*					
Pastrami – high c	-5	18	1200000	6.08	-2	T				
Pastrami – high c	*				-3	189			5	5
Pastrami – high c	*				-4	28	280000	6.45	5	5
Pastrami – high d	-3	T			*					
Pastrami – high d	-4	127			*					
Pastrami – high d	-5	13	1300000	6.11	-2	T				
Pastrami – high d	*				-3	207			5	5
Pastrami – high d	*				-4	40	400000	6.60	5	5

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Pastrami – high e	-3	148			*					
Pastrami – high e	-4	30	1600000	6.20	*					
Pastrami – high e	-5				-2	T				
Pastrami – high e	*				-3	215			5	5
Pastrami – high e	*				-4	29	290000	6.46	5	5
Chicken roll –low a	-1	133			0.5 ml -1	37			3	3
Chicken roll –low a	-1	117			0.5ml -1	45			2	2
Chicken roll –low a	-2	11			0.1ml -1	14			3	3
Chicken roll –low a	-3	1	1200	3.08	0.1ml -1	13	1100	3.04	2	2
Chicken roll –low a	*				-2	0				
Chicken roll –low b	-1	108			0.5 ml -1	92			5	5
Chicken roll –low b	-1	109			0.5ml -1	SP				
Chicken roll –low b	-2	4			0.1ml -1	11			3	3
Chicken roll –low b	-3	1	1100	3.04	0.1ml -1	8	1700	3.23	2	2
Chicken roll –low b	*				-2	1				
Chicken roll –low c	-1	209			0.5 ml -1	106			3	3
Chicken roll –low c	-1	189			0.5ml -1	78			2	2
Chicken roll –low c	-2	22			0.1ml -1	28			3	3
Chicken roll –low c	-3	4	2400	3.38	0.1ml -1	36			2	2
Chicken roll –low c	*				-2	1	3100	3.49		
Chicken roll –low d	-1	97			0.5 ml -1	30			3	3
Chicken roll –low d	-1	91			0.5ml -1	26			2	2
Chicken roll –low d	-1	91			0.1ml -1	13			3	3
Chicken roll –low d	-2	7	900	2.95	0.1ml -1	13			2	2
Chicken roll –low d	*				-2	1	1300	3.11		
Chicken roll –low e	-1	99			0.5 ml -1	67			3	3
Chicken roll –low e	-1	104			0.5ml -1	80			2	2
Chicken roll –low e	-2	8			0.1ml -1	6			3	3
Chicken roll –low e	-3	1	1000	3.00	0.1ml -1	8	1100	3.04	2	2
Chicken roll –med a	-1	T			*					
Chicken roll –med a	-1	T			*					
Chicken roll –med a	-2	172			0.1ml -1	251				
Chicken roll –med a	-3	10			0.1ml -1	212				
Chicken roll –med a	-4	2	10000	4.00	-2	26			5	5
Chicken roll –med a	*				-3	3	26000	4.41	3	3
Chicken roll –med b	-1	T			*					
Chicken roll –med b	-1	T			*					
Chicken roll –med b	-2	T			0.1ml -1	280				
Chicken roll –med b	-3	25			0.1ml -1	263				
Chicken roll –med b	-4	3	26000	4.41	-2	27			5	5
Chicken roll –med b	*				-3	5	29000	4.46	5	5

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Chicken roll –med c	-1	T			*					
Chicken roll –med c	-1	T			*					
Chicken roll –med c	-2	236			0.1ml -1	243				
Chicken roll –med c	-3	26			0.1ml -1	273				
Chicken roll –med c	-4	0	26000	4.41	-2	25			5	5
Chicken roll –med c	*				-3	5	27000	4.43	5	5
Chicken roll –med d	-1	T			*					
Chicken roll –med d	-1	T			*					
Chicken roll –med d	-2	256			0.1ml -1	267				
Chicken roll –med d	-3	28			0.1ml -1	260				
Chicken roll –med d	-4	0	28000	4.45	-2	27			5	5
Chicken roll –med d	*				-3	1	26000	4.41	1	1
Chicken roll –med e	-1	T			*					
Chicken roll –med e	-1	T			*					
Chicken roll –med e	-2	247			0.1ml -1	308				
Chicken roll –med e	-3	20			0.1ml -1	282				
Chicken roll –med e	-4	1	19000	4.28	-2	28	26000	4.41	5	5
Chicken roll –med e	*				-3	1			1	1
Chicken roll –high a	-3	T			*					
Chicken roll –high a	-4	182			*					
Chicken roll –high a	-5	14	1400000	6.15	-2	T				
Chicken roll –high a	*				-3	198			5	5
Chicken roll –high a	*				-4	15	150000	6.18	5	5
Chicken roll –high b	-3	T			*					
Chicken roll –high b	-4	150			*					
Chicken roll –high b	-5	10	1500000	6.18	-2	T				
Chicken roll –high b	*				-3	170			5	5
Chicken roll –high b	*				-4	17	170000	6.23	5	5
Chicken roll –high c	-3	T			*					
Chicken roll –high c	-4	167			*					
Chicken roll –high c	-5	17	1700000	6.23	-2	T				
Chicken roll –high c	*				-3	222			5	5
Chicken roll –high c	*				-4	18	180000	6.26	5	5
Chicken roll –high d	-3	T			*					
Chicken roll –high d	-4	221			*					
Chicken roll –high d	-5	14	1400000	6.15	-2	T				
Chicken roll –high d	*				-3	277			5	5
Chicken roll –high d	*				-4	31	310000	6.49	5	5
Chicken roll –high e	-3	T			*					
Chicken roll –high e	-4	159			*					
Chicken roll –high e	-5	11	1100000	6.04	-2	T				
Chicken roll –high e	*				-3	200			5	5

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Chicken roll –high e	*				-4	22	220000	6.34	5	5
Prawns – low a	-1	108			0.5 ml -1	36			3	3
Prawns – low a	-1	82			0.5ml -1	40			2	2
Prawns – low a	-2	8			0.1ml -1	11			3	3
Prawns – low a	-3	0	940	2.97	0.1ml -1	17			2	2
Prawns – low a	*				-2	1	1100	3.04		
Prawns – low a	*				*					
Prawns – low a	*				*					
Prawns – low b	-1	85			0.5 ml -1	30			3	3
Prawns – low b	-1	108			0.5ml -1	27			2	2
Prawns – low b	-2	1			0.1ml -1	12			3	3
Prawns – low b	-3	1	920	2.96	0.1ml -1	7			2	2
Prawns – low b	*				-2	0	760	2.88		
Prawns – low b	*				*					
Prawns – low b	*				*					
Prawns – low c	-1	112			0.5 ml -1	47			3	3
Prawns – low c	-1	113			0.5ml -1	56			2	2
Prawns – low c	-2	15			0.1ml -1	19			3	3
Prawns – low c	-3	1	1100	3.04	0.1ml -1	18			2	2
Prawns – low c	*				-2	4	1400	3.15		
Prawns – low c	*				*					
Prawns – low c	*				*					
Prawns – low d	-1	92			0.5 ml -1	48			3	3
Prawns – low d	-1	78			0.5ml -1	63			2	2
Prawns – low d	-2	7			0.1ml -1	11			3	3
Prawns – low d	-3	0	840	2.92	0.1ml -1	5			2	2
Prawns – low d	*				-2	1	955	2.98		
Prawns – low d	*				*					
Prawns – low d	*				*					
Prawns – low e	-1	87			0.5 ml -1	63			3	3
Prawns – low e	-1	71			0.5ml -1	65			2	2
Prawns – low e	-2	7			0.1ml -1	13			3	3
Prawns – low e	-3	1	790	2.90	0.1ml -1	21			2	2
Prawns – low e	*				-2	2	2100	3.32		
Prawns – low e	*				*					
Prawns – low e	*				*					
Prawns – med a	-1	T			*					
Prawns – med a	-1	T			*					
Prawns – med a	-2	116			0.1ml -1	211			3	3
Prawns – med a	-3	17			0.1ml -1	137			2	2
Prawns – med a	-4	0	12000	4.08	-2	25			5	5
Prawns – med a	*				-3	0	25000	4.40		
Prawns – med a	*				*					

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Prawns – med b	-1	T			*					
Prawns – med b	-1	T			*					
Prawns – med b	-2	T			0.1ml -1	226				
Prawns – med b	-3	31			0.1ml -1	278				
Prawns – med b	-4	5	33000	4.52	-2	25			5	5
Prawns – med b	*				-3	1	24000	4.38	1	1
Prawns – med b	*				*					
Prawns – med c	-1	T			*					
Prawns – med c	-1	T			*					
Prawns – med c	-2	125			0.1ml -1	251				
Prawns – med c	-3	23			0.1ml -1	214				
Prawns – med c	-4	1	22000	4.34	-2	33				
Prawns – med c	*				-3	0	33000	4.52		
Prawns – med c	*				*					
Prawns – med d	-1	T			*					
Prawns – med d	-1	T			*					
Prawns – med d	-2	T			0.1ml -1	199				
Prawns – med d	-3	45			0.1ml -1	276				
Prawns – med d	-4	0	45000	4.65	-2	33			5	5
Prawns – med d	*				-3	2	32000	4.51	2	2
Prawns – med d	*				*					
Prawns – med e	-1	T			*					
Prawns – med e	-1	T			*					
Prawns – med e	-2	187			0.1ml -1	98				
Prawns – med e	-3	16			0.1ml -1	T				
Prawns – med e	-4	2	16000	4.20	-2	18			5	5
Prawns – med e	*				-3	2	18000	4.26	2	2
Prawns – med e	*				*					
Prawns – high a	*				*					
Prawns – high a	-2				*					
Prawns – high a	-3	T			*					
Prawns – high a	-4	142			*					
Prawns – high a	-5	25	2500000	6.40	-2	T				
Prawns – high a	*				-3	251			5	5
Prawns – high a	*				-4	34	340000	6.53	5	5
Prawns – high b	*				*					
Prawns – high b	-2				*					
Prawns – high b	-3	T			*					
Prawns – high b	-4	145			*					
Prawns – high b	-5	16	1600000	6.20	-2	T				
Prawns – high b	*				-3	183			5	5
Prawns – high b	*				-4	19	190000	6.28	5	5

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Prawns – high c	*				*					
Prawns – high c	-2				*					
Prawns – high c	-3	T			*					
Prawns – high c	-4	182			*					
Prawns – high c	-5	23	2300000	6.36	-2	T				
Prawns – high c	*				-3	138			5	5
Prawns – high c	*				-4	16	160000	6.20	5	5
Prawns – high d	*				*					
Prawns – high d	-2				*					
Prawns – high d	-3	T			*					
Prawns – high d	-4	102			*					
Prawns – high d	-5	15	1500000	6.18	-2	T				
Prawns – high d	*				-3	188			5	5
Prawns – high d	*				-4	23	230000	6.36	5	5
Prawns – high e	*				*					
Prawns – high e	-2				*					
Prawns – high e	-3	T			*					
Prawns – high e	-4	167			-2	T				
Prawns – high e	-5	14	1400000	6.15	-3	187			5	5
Prawns – high e	*				-4	28	280000	6.45	5	5
Prawns – high e	*				-4					
Salmon – low a	-1	70			0.5 ml -1	90			2	2
Salmon – low a	-1	55			0.5ml -1	80			3	3
Salmon – low a	-2	14			0.1ml -1	17			2	2
Salmon – low a	-3	2	1400	3.15	0.1ml -1	28			3	3
Salmon – low a	*				-2	4	2300	3.36	4	4
Salmon – low b	-1	T			0.5 ml -1	94			2	2
Salmon – low b	-1	T			0.5ml -1	87			3	3
Salmon – low b	-2	15			0.1ml -1	19			2	2
Salmon – low b	-3	3	1600	3.20	0.1ml -1	16			3	3
Salmon – low b	*				-2	1	1700	3.23	3	3
Salmon – low c	-1	50			0.5 ml -1	85			2	2
Salmon – low c	-1	40			0.5ml -1	70			3	3
Salmon – low c	-2	11			0.1ml -1	19			2	2
Salmon – low c	-3	2	1100	3.04	0.1ml -1	15			3	3
Salmon – low c	*				-2	3	1800	3.26	3	3
Salmon – low d	-1	64			0.5 ml -1	69			2	2
Salmon – low d	-1	72			0.5ml -1	62			3	3
Salmon – low d	-2	14			0.1ml -1	18			2	2
Salmon – low d	-3	2	1400	3.15	0.1ml -1	14			3	3
Salmon – low d	*				-2	2	1600	3.20	2	2
Salmon – low e	-1	70			0.5 ml -1	71			2	2

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item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Salmon – low e	-1	79			0.5ml -1	82			3	3
Salmon – low e	-2	14			0.1ml -1	20			2	2
Salmon – low e	-3	0			0.1ml -1	17			3	3
Salmon – low e	*		1400	3.15	-2	0	3400	3.53		
Salmon – med a	-1	T			*					
Salmon – med a	-1	T			*					
Salmon – med a	-2	115			0.1ml -1	222				
Salmon – med a	-3	18			0.1ml -1	235				
Salmon – med a	-4	1	18000	4.26	-2	33			5	5
Salmon – med a	*				-3	1	31000	4.49	1	1
Salmon – med b	-1	T			*					
Salmon – med b	-1	T			*					
Salmon – med b	-2	101			0.1ml -1	242				
Salmon – med b	-3	13			0.1ml -1	237				
Salmon – med b	-4	2	13000	4.11	-2	26			5	5
Salmon – med b	*				-3	5	28000	4.45	5	5
Salmon – med c	-1	T			*					
Salmon – med c	-1	T			*					
Salmon – med c	-2	181			0.1ml -1	234				
Salmon – med c	-3	21			0.1ml -1	260				
Salmon – med c	-4	3	22000	4.34	-2	27			5	5
Salmon – med c	*				-3	3	27000	4.43	3	3
Salmon – med d	-1	T			*					
Salmon – med d	-1	T			*					
Salmon – med d	-2	T			0.1ml -1	250				
Salmon – med d	-3	24			0.1ml -1	274				
Salmon – med d	-4	2	24000	4.38	-2	23			5	5
Salmon – med d	*				-3	2	23000	4.36	2	2
Salmon – med e	-1	T			*					
Salmon – med e	-1	T			*					
Salmon – med e	-2	107			0.1ml -1	182				
Salmon – med e	-3	19			0.1ml -1	221				
Salmon – med e	-4	1	19000	4.28	-2	35			5	5
Salmon – med e	*				-3	1	33000	4.52	1	1
Salmon – high a	-3	T			*					
Salmon – high a	-4	124			*					
Salmon – high a	-5	20	2000000	6.30	-2	T				
Salmon – high a	*				-3	240			5	5
Salmon – high a	*				-4	36	360000	6.56	5	5
Salmon – high b	-3	T			*					
Salmon – high b	-4	317			*					
Salmon – high b	-5	0	3200000	6.51	-2	T				

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Salmon – high b	*				-3	264			5	5
Salmon – high b	*				-4	36	360000	6.56	5	5
Salmon – high c	-3	T			*					
Salmon – high c	-4	214			*					
Salmon – high c	-5	24	2400000	6.38	-2	T				
Salmon – high c	*				-3	247			5	5
Salmon – high c	*				-4	28	280000	6.45	5	5
Salmon – high d	-3	T			*					
Salmon – high d	-4	210			*					
Salmon – high d	-5	23	2300000	6.36	-2	T				
Salmon – high d	*				-3	201			5	5
Salmon – high d	*				-4	30	300000	6.48	5	5
Salmon – high e	-3	T			*					
Salmon – high e	-4	164			*					
Salmon – high e	-5	28	2200000	6.34	-2	T				
Salmon – high e	*				-3	298			5	5
Salmon – high e	*				-4	35	350000	6.54		
Pasta salad –low a	-1	33			0.5 ml -1	15			2	2
Pasta salad –low a	-1	34			0.5ml -1	18			3	3
Pasta salad –low a	-2	2			0.1ml -1	5			2	2
Pasta salad –low a	-3	1	328	2.52	0.1ml -1	6			3	3
Pasta salad –low a	*				-2	0	440	2.64		
Pasta salad –low b	-1	40			0.5 ml -1	18			2	2
Pasta salad –low b	-1	47			0.5ml -1	32			3	3
Pasta salad –low b	-2	4			0.1ml -1	3			2	2
Pasta salad –low b	-3	1	433	2.64	0.1ml -1	5			3	3
Pasta salad –low b	*				-2	0	450	2.65		
Pasta salad –low c	-1	53			0.5 ml -1	22			2	2
Pasta salad –low c	-1	66			0.5ml -1	19			3	3
Pasta salad –low c	-2	8			0.1ml -1	4			2	2
Pasta salad –low c	-3	1	610	2.79	0.1ml -1	6			3	3
Pasta salad –low c	*				-2	1	480	2.68	1	1
Pasta salad –low d	-1	37			0.5 ml -1	11			2	2
Pasta salad –low d	-1	45			0.5ml -1	25			3	3
Pasta salad –low d	-2	6			0.1ml -1	7			2	2
Pasta salad –low d	-3	0	419	2.62	0.1ml -1	4			3	3
Pasta salad –low d	*				-2	1	455	2.66	1	1
Pasta salad –low e	-1	39			0.5 ml -1	22			2	2
Pasta salad –low e	-1	46			0.5ml -1	25			3	3
Pasta salad –low e	-2	2			0.1ml -1	5			2	2
Pasta salad –low e	-3	0	414	2.62	0.1ml -1	6			3	3

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Pasta salad –low e	*				-2	0	510	2.71		
Pasta salad –med a	-1	T			*					
Pasta salad –med a	-1	T			*					
Pasta salad –med a	-2	85			0.1ml -1	112			2	2
Pasta salad –med a	-3	11			0.1ml -1	103			3	3
Pasta salad –med a	-4	0	8700	3.94	-2	6			5	5
Pasta salad –med a	*				-3	1	11000	4.04	1	1
Pasta salad –med b	-1	T			*					
Pasta salad –med b	-1	T			*					
Pasta salad –med b	-2	106			0.1ml -1	136			2	2
Pasta salad –med b	-3	9			0.1ml -1	125			3	3
Pasta salad –med b	-4	0	11000	4.04	-2	15			5	5
Pasta salad –med b	*				-3	4	13000	4.11	4	4
Pasta salad –med c	-1	T			*					
Pasta salad –med c	-1	T			*					
Pasta salad –med c	-2	133			0.1ml -1	202			2	2
Pasta salad –med c	-3	10			0.1ml -1	180			3	3
Pasta salad –med c	-4	1	13000	4.11	-2	19			5	5
Pasta salad –med c	*				-3	2	13000	4.11	4	4
Pasta salad –med d	-1	T			*					
Pasta salad –med d	-1	T			*					
Pasta salad –med d	-2	112			0.1ml -1	98			2	2
Pasta salad –med d	-3	9			0.1ml -1	184			3	3
Pasta salad –med d	-4	1	11000	4.04	-2	14			5	5
Pasta salad –med d	*				-3	3	16000	4.20	3	3
Pasta salad –med e	-1	T			*					
Pasta salad –med e	-1	T			*					
Pasta salad –med e	-2	117			0.1ml -1	137			5	5
Pasta salad –med e	-3	15			0.1ml -1	149			5	5
Pasta salad –med e	-4	1	15000	4.18	-2	7			3	3
Pasta salad –med e	*				-3	2	14000	4.15	2	2
Pasta salad –high a	-3	T			*					
Pasta salad –high a	-4	54			*					
Pasta salad –high a	-5	6	550000	5.74	-2	T				
Pasta salad –high a	*				-3	57			5	5
Pasta salad –high a	*				-4	10	610000	5.79	5	5
Pasta salad –high b	-3	T			*					
Pasta salad –high b	-4	89			*					
Pasta salad –high b	-5	11	910000	5.96	-2	T				
Pasta salad –high b	*				-3	123			5	5
Pasta salad –high b	*				-4	11	120000	6.08	5	5

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Pasta salad –high c	-3	T			*					
Pasta salad –high c	-4	99			*					
Pasta salad –high c	-5	9	980000	5.99	-2	T				
Pasta salad –high c	*				-3	108			5	5
Pasta salad –high c	*				-4	13	110000	6.04	5	5
Pasta salad –high d	-3	T			*					
Pasta salad –high d	-4	47			*					
Pasta salad –high d	-5	8	500000	5.70	-2	T				
Pasta salad –high d	*				-3	77			5	5
Pasta salad –high d	*				-4	4	740000	5.87	4	4
Pasta salad –high e	-3	T			*					
Pasta salad –high e	-4	88			*					
Pasta salad –high e	-5	12	910000	5.96	-2	T				
Pasta salad –high e	*				-3	119			5	5
Pasta salad –high e	*				-4	9	120000	6.08	4	4
Sandwich spread a	-1	40			0.5 ml -1	18			2	2
Sandwich spread a	-1	46			0.5ml -1	21			3	3
Sandwich spread a	-2	7			0.1ml -1	17			2	2
Sandwich spread a	-3	0	440	2.64	0.1ml -1	9			3	3
Sandwich spread a	*				-2	0	845	2.93		
Sandwich spread b	-1	42			0.5 ml -1	17			2	2
Sandwich spread b	-1	39			0.5ml -1	29			3	3
Sandwich spread b	-2	4			0.1ml -1	2			2	2
Sandwich spread b	-3	0	400	2.60	0.1ml -1	6			3	3
Sandwich spread b	*				-2	1	430	2.63		
Sandwich spread c	-1	42			0.5 ml -1	31			2	2
Sandwich spread c	-1	34			0.5ml -1	33			3	3
Sandwich spread c	-2	2			0.1ml -1	2			2	2
Sandwich spread c	-3	1	370	2.57	0.1ml -1	3			3	3
Sandwich spread c	*				-2	0	445	2.65		
Sandwich spread d	-1	46			0.5 ml -1	19			2	2
Sandwich spread d	-1	47			0.5ml -1	26			3	3
Sandwich spread d	-2	5			0.1ml -1	10			2	2
Sandwich spread d	-3	1	466	2.67	0.1ml -1	4			3	3
Sandwich spread d	*				-2	0	575	2.76		
Sandwich spread e	-1	36			0.5 ml -1	28			2	2
Sandwich spread e	-1	36			0.5ml -1	27			3	3
Sandwich spread e	-2	5			0.1ml -1	9			2	2
Sandwich spread e	-3	0	366	2.56	0.1ml -1	4			3	3
Sandwich spread e	*				-2	0	600	2.78		
Sandwich spread a	-1	T			*					

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Sandwich spread a	-1	T			*					
Sandwich spread a	-2	84			0.1ml -1	135			3	3
Sandwich spread a	-3	13			0.1ml -1	115			2	2
Sandwich spread a	-4	1	8800	3.94	-2	14				
Sandwich spread a	*				-3	0	1300	3.11		
Sandwich spread b	-1	T			*					
Sandwich spread b	-1	T			*					
Sandwich spread b	-2	88			0.1ml -1	163			3	3
Sandwich spread b	-3	11			0.1ml -1	141			2	2
Sandwich spread b	-4	3	8800	3.94	-2	16			5	5
Sandwich spread b	*				-3	0	16000	4.20		
Sandwich spread c	-1	T			*					
Sandwich spread c	-1	T			*					
Sandwich spread c	-2	84			0.1ml -1	134			2	2
Sandwich spread c	-3	13			0.1ml -1	128			3	3
Sandwich spread c	-4	0	8800	3.94	-2	13			5	5
Sandwich spread c	*				-3	1	13000	4.11		
Sandwich spread d	-1	T			*					
Sandwich spread d	-1	T			*					
Sandwich spread d	-2	91			0.1ml -1	161			3	3
Sandwich spread d	-3	10			0.1ml -1	135			2	2
Sandwich spread d	-4	1	9200	3.96	-2	15			5	5
Sandwich spread d	*				-3	0	12000	4.08		
Sandwich spread e	-1	T			*					
Sandwich spread e	-1	T			*					
Sandwich spread e	-2	125			0.1ml -1	119			5	5
Sandwich spread e	-3	18			0.1ml -1	120			0	0
Sandwich spread e	-4	3	19000	4.28	-2	11			5	5
Sandwich spread e	*				-3	2	15000	4.18	2	2
Sandwich spread a	-3	T			*					
Sandwich spread a	-4	79			*					
Sandwich spread a	-5	11	820000	5.91	-2	T				
Sandwich spread a	*				-3	127			5	5
Sandwich spread a	*				-4	11	130000	6.11	5	5
Sandwich spread b	-3	T			*					
Sandwich spread b	-4	91			*					
Sandwich spread b	-5	19	1900000	6.28	-2	T				
Sandwich spread b	*				-3	132			5	5
Sandwich spread b	*				-4	10	130000	6.11	5	5
Sandwich spread c	-3	T			*					
Sandwich spread c	-4	61			*					
Sandwich spread c	-5	14	680000	5.83	-2	T				

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Sandwich spread c	*				-3	104			5	5
Sandwich spread c	*				-4	10	100000	6.00	5	5
Sandwich spread d	-3	T			*					
Sandwich spread d	-4	65			*					
Sandwich spread d	-5	12	700000	5.85	-2	T				
Sandwich spread d	*				-3	106			5	5
Sandwich spread d	*				-4	12	110000	6.04	5	5
Sandwich spread e	-3	T			*					
Sandwich spread e	-4	68			*					
Sandwich spread e	-5	14	750000	5.88	-2	T				
Sandwich spread e	*				-3	131			5	5
Sandwich spread e	*				-4	16	130000	6.11	5	5
RTC pasta – low a	-1	59			0.5 ml -1	29			2	2
RTC pasta – low a	-1	50			0.5ml -1	39			3	3
RTC pasta – low a	-2	1			0.1ml -1	8			2	2
RTC pasta – low a	-3	1	500		0.1ml -1	6			3	3
RTC pasta – low a	*				-2	0	690	2.84		
RTC pasta – low b	-1	62			0.5 ml -1	50			2	2
RTC pasta – low b	-1	70			0.5ml -1	38			3	3
RTC pasta – low b	-2	7			0.1ml -1	8			2	2
RTC pasta – low b	-3	2	660		0.1ml -1	5	765	2.88	3	3
RTC pasta – low b	*				-2					
RTC pasta – low c	-1	49			0.5 ml -1	33			2	2
RTC pasta – low c	-1	27			0.5ml -1	41			3	3
RTC pasta – low c	-2	3			0.1ml -1	8			2	2
RTC pasta – low c	-3	0	380		0.1ml -1	6	720	2.86	3	3
RTC pasta – low c	*				-2	0				
RTC pasta – low d	-1	83			0.5 ml -1	60			2	2
RTC pasta – low d	-1	96			0.5ml -1	50			3	3
RTC pasta – low d	-2	7			0.1ml -1	13			2	2
RTC pasta – low d	-3	0	890	2.95	0.1ml -1	15			3	2
RTC pasta – low d	*				-2	1	1000	3.00		
RTC pasta – low e	-1	56			0.5 ml -1	43			2	2
RTC pasta – low e	-1	73			0.5ml -1	52			3	3
RTC pasta – low e	-2	6			0.1ml -1	8			2	2
RTC pasta – low e	-3	0	640	2.81	0.1ml -1	11			3	3
RTC pasta – low e	*				-2	0	950	2.98		
RTC pasta – med a	-1	T			*					
RTC pasta – med a	-1	T			*					
RTC pasta – med a	-2	104			0.1ml -1	227				
RTC pasta – med a	-3	24			0.1ml -1	221				

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
RTC pasta – med a	-4	1	23000	4.36	-2	26			5	5
RTC pasta – med a	*				-3	2	26000	4.41	2	2
RTC pasta – med b	-1	T			*					
RTC pasta – med b	-1	T			*					
RTC pasta – med b	-2	175			0.1ml -1	218				
RTC pasta – med b	-3	12			0.1ml -1	224				
RTC pasta – med b	-4	1	12000	4.08	-2	21			5	5
RTC pasta – med b	*				-3	2	21000	4.32	2	2
RTC pasta – med c	-1	T			*					
RTC pasta – med c	-1	T			*					
RTC pasta – med c	-2	102			0.1ml -1	214				
RTC pasta – med c	-3	25			0.1ml -1	213				
RTC pasta – med c	-4	3	26000	4.41	-2	22			5	5
RTC pasta – med c	*				-3	3	23000	4.36	3	3
RTC pasta – med d	-1	T			*					
RTC pasta – med d	-1	T			*					
RTC pasta – med d	-2	139			0.1ml -1	201			3	3
RTC pasta – med d	-3	10			0.1ml -1	219			2	2
RTC pasta – med d	-4	2	14000	4.15	-2	26			5	5
RTC pasta – med d	*				-3	0	25000	4.40		
RTC pasta – med e	-1	T			*					
RTC pasta – med e	-1	T			*					
RTC pasta – med e	-2	130			0.1ml -1	187				
RTC pasta – med e	-3	13			0.1ml -1	190				
RTC pasta – med e	-4	1	13000	4.11	-2	15			5	5
RTC pasta – med e	*				-3	2	16000	4.20	2	2
RTC pasta – high a	-3	T			*					
RTC pasta – high a	-4	85			*					
RTC pasta – high a	-5	13	890000	5.95	-2	T				
RTC pasta – high a	*				-3	116			5	5
RTC pasta – high a	*				-4	16	120000	6.08	5	5
RTC pasta – high b	-3	T			*					
RTC pasta – high b	-4	146			*					
RTC pasta – high b	-5	13	1400000	6.15	-2	T				
RTC pasta – high b	*				-3	173			5	5
RTC pasta – high b	*				-4	20	200000	6.30	5	5
RTC pasta – high c	-3	T			*					
RTC pasta – high c	-4	167			*					
RTC pasta – high c	-5	17	1700000	6.23	-2	T				
RTC pasta – high c	*				-3	186			5	5
RTC pasta – high c	*				-4	23	230000	6.36	5	5

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
RTC pasta – high d	-3	T			*					
RTC pasta – high d	-4	127			*					
RTC pasta – high d	-5	8	1200000	6.08	-2	T				
RTC pasta – high d	*				-3	141			5	5
RTC pasta – high d	*				-4	15	140000	6.15	5	5
RTC pasta – high e	-3	T			*					
RTC pasta – high e	-4	167			*					
RTC pasta – high e	-5	25	2500000	6.40	-2	T				
RTC pasta – high e	*				-3	232			5	5
RTC pasta – high e	*				-4	31	310000	6.49	5	5
Infant cereal –low a	-1	30			0.5 ml -1	21			2	2
Infant cereal –low a	-1	50			0.5ml -1	22			3	3
Infant cereal –low a	-2	2			0.1ml -1	7			2	2
Infant cereal –low a	-3	1	390	2.59	0.1ml -1	5			3	3
Infant cereal –low a	*				-2	2	515	2.71	2	2
Infant cereal –low b	-1	40			0.5 ml -1	16			2	2
Infant cereal –low b	-1	39			0.5ml -1	28			3	3
Infant cereal –low b	-2	1			0.1ml -1	2			2	2
Infant cereal –low b	-3	0	524	2.72	0.1ml -1	3			3	3
Infant cereal –low b	*				-2	0	345	2.54		
Infant cereal –low c	-1	51			0.5 ml -1	19			2	2
Infant cereal –low c	-1	52			0.5ml -1	23			3	3
Infant cereal –low c	-2	7			0.1ml -1	3			2	2
Infant cereal –low c	-3	0	550	2.74	0.1ml -1	8			3	3
Infant cereal –low c	*				-2	2	485	2.69	2	2
Infant cereal –low d	-1	61			0.5 ml -1	33			2	2
Infant cereal –low d	-1	49			0.5ml -1	21			3	3
Infant cereal –low d	-2	5			0.1ml -1	5			2	2
Infant cereal –low d	-3	1	550	2.74	0.1ml -1	10			3	3
Infant cereal –low d	*				-2	0	645	2.81		
Infant cereal –low e	-1	63			0.5 ml -1	34			2	2
Infant cereal –low e	-1	67			0.5ml -1	64			3	3
Infant cereal –low e	-2	6			0.1ml -1	6			2	2
Infant cereal –low e	-3	0	650	2.81	0.1ml -1	7			3	3
Infant cereal –low e	*				-2	0	815	2.91		
Infant cereal –med a	-1	T			*					
Infant cereal –med a	-1	T			*					
Infant cereal –med a	-2	98			0.1ml -1	152				
Infant cereal –med a	-3	8			0.1ml -1	123				
Infant cereal –med a	-4	0	9600	3.98	-2	16			5	5
Infant cereal –med a	*				-3	2	16000	4.20	2	2

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Infant cereal –med b	-1	T			*					
Infant cereal –med b	-1	T			*					
Infant cereal –med b	-2	72			0.1ml -1	86			2	2
Infant cereal –med b	-3	6			0.1ml -1	97			3	3
Infant cereal –med b	-4	0	7100	3.85	-2	8			5	5
Infant cereal –med b	*				-3	1	9100	3.96	1	1
Infant cereal –med c	-1	T			*					
Infant cereal –med c	-1	T			*					
Infant cereal –med c	-2	93			0.1ml -1	71			2	2
Infant cereal –med c	-3	5			0.1ml -1	124			3	3
Infant cereal –med c	-4	1	8900	3.95	-2	7			5	5
Infant cereal –med c	*				-3	0	9600	3.98		
Infant cereal –med d	-1	T			*					
Infant cereal –med d	-1	T			*					
Infant cereal –med d	-2	92			0.1ml -1	109			2	2
Infant cereal –med d	-3	6			0.1ml -1	90			3	3
Infant cereal –med d	-4	1	8900	3.95	-2	19			5	5
Infant cereal –med d	*				-3	2	11000	4.04	2	2
Infant cereal –med e	-1	T			*					
Infant cereal –med e	-1	T			*					
Infant cereal –med e	-2	78			0.1ml -1	101			2	2
Infant cereal –med e	-3	4			0.1ml -1	74			3	3
Infant cereal –med e	-4	1	7500	3.88	-2	8			5	5
Infant cereal –med e	*				-3	0	8700	3.94		
Infant cereal -high a	-3	T			*					
Infant cereal -high a	-4	NOT PLATED			*					
Infant cereal -high a	-5	16	1600	6.20	-2	T				
Infant cereal -high a	*				-3	132			5	5
Infant cereal -high a	*				-4	19	140000	6.15	5	5
Infant cereal -high b	-3	T			*					
Infant cereal -high b	-4	79			*					
Infant cereal -high b	-5	10	8100	5.91	-2	T				
Infant cereal -high b	*				-3	91			5	5
Infant cereal -high b	*				-4	6	880000	5.94	5	5
Infant cereal -high c	-3	T			*					
Infant cereal -high c	-4	98			*					
Infant cereal -high c	-5	5	9400	5.97	-2	T				
Infant cereal -high c	*				-3	107			5	5
Infant cereal -high c	*				-4	11	110000	6.04	5	5
Infant cereal -high d	-3	T			*					
Infant cereal -high d	-4	66			*					

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Infant cereal -high d	-5	0	6600	5.82	-2	T				
Infant cereal -high d	*				-3	81			5	5
Infant cereal -high d	*				-4	9	820000	5.91	5	5
Infant cereal -high e	-3	T			*					
Infant cereal -high e	-4	73			*					
Infant cereal -high e	-5	7	7300	5.86	-2	T				
Infant cereal -high e	*				-3	81			5	5
Infant cereal -high e	*				-4	9	820000	5.91	5	5
Custard – low a	-1	22			0.5 ml -1	26			5	5
Custard – low a	-1	19			0.5ml -1	16			5	5
Custard – low a	-2	1	200	2.30	0.1ml -1	0				
Custard – low a	-3				0.1ml -1	6			5	5
Custard – low a	*				-2	0	420	2.62		
Custard – low b	-1	33			0.5 ml -1	14			5	5
Custard – low b	-1	30			0.5ml -1	23			5	5
Custard – low b	-2	1			0.1ml -1	3			3	3
Custard – low b	-3	1	300	2.48	0.1ml -1	3			3	3
Custard – low b	*				-2	2	335	2.53		
Custard – low c	-1	25			0.5 ml -1	19			5	5
Custard – low c	-1	28			0.5ml -1	34			5	5
Custard – low c	-2	4			0.1ml -1	4			4	4
Custard – low c	-3	0	570	2.76	0.1ml -1	3			3	3
Custard – low c	*				-2	0	440	2.64		
Custard – low d	-1	30			0.5 ml -1	27			5	5
Custard – low d	-1	18			0.5ml -1	23			5	5
Custard – low d	-2	2			0.1ml -1	5			5	5
Custard – low d	-3	0	240	2.38	0.1ml -1	6			5	5
Custard – low d	*				-2	0	525	2.72		
Custard – low e	-1	25			0.5 ml -1	22			5	5
Custard – low e	-1	36			0.5ml -1	28			5	5
Custard – low e	-2	2			0.1ml -1	5			5	5
Custard – low e	-3	1	300	2.48	0.1ml -1	4			4	4
Custard – low e	*				-2	0	475	2.68		
Custard – med a	-1	T			*					
Custard – med a	-1	T			*					
Custard – med a	-2	34			0.1ml -1	68			5	5
Custard – med a	-3	3			0.1ml -1	71			5	5
Custard – med a	-4	0	3400	3.53	-2	3			3	3
Custard – med a	*				-3	1	6800	3.83	1	1
Custard – med b	-1	T			*					

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Custard – med b	-1	T			*					
Custard – med b	-2	62			0.1ml -1	114			5	5
Custard – med b	-3	7			0.1ml -1	134			5	5
Custard – med b	-4	0	6300	3.80	-2	19			5	5
Custard – med b	*				-3	4	2100	3.32	4	4
Custard – med c	-1	T			*					
Custard – med c	-1	T			*					
Custard – med c	-2	84			0.1ml -1	179				
Custard – med c	-3	11			0.1ml -1	183				
Custard – med c	-4	2	8600	3.93	-2	25			5	5
Custard – med c	*				-3	2	25000	4.40	2	2
Custard – med d	-1	T			*					
Custard – med d	-1	T			*					
Custard – med d	-2	45			0.1ml -1	87			5	5
Custard – med d	-3	3			0.1ml -1	95			5	5
Custard – med d	-4	0	4400	3.64	-2	11			5	5
Custard – med d	*				-3	0	9200	3.96		
Custard – med e	-1	T			*					
Custard – med e	-1	T			*					
Custard – med e	-2	34			0.1ml -1	64			5	5
Custard – med e	-3	1			0.1ml -1	60			5	5
Custard – med e	-4	0	3200	3.51	-2	11			5	5
Custard – med e	*				-3	0	6400	3.81		
Custard – high a	-3	T			*					
Custard – high a	-4	63			*					
Custard – high a	-5	5	6200	5.79	-2	T				
Custard – high a	*				-3	106			5	5
Custard – high a	*				-4	8	100000	6.00	5	5
Custard – high b	-3	T			*					
Custard – high b	-4	71			*					
Custard – high b	-5	5	6900	5.84	-2	T				
Custard – high b	*				-3	118			5	5
Custard – high b	*				-4	9	120000	6.08	5	5
Custard – high c	-3	T			*					
Custard – high c	-4	64			*					
Custard – high c	-5	5	6300	5.80	-2	T				
Custard – high c	*				-3	115			5	5
Custard – high c	*				-4	3	110000	6.04	3	3
Custard – high d	-3	T			*					
Custard – high d	-4	72			*					
Custard – high d	-5	3	6800	5.83	-2	T				
Custard – high d	*				-3	110			5	5

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Custard – high d	*				-4	13	110000	6.04	5	5
Custard – high e	-3	T			*					
Custard – high e	-4	75			*					
Custard – high e	-5	6	7600	5.88	-2	T				
Custard – high e	*				-3	112			5	5
Custard – high e	*				-4	15	120000	6.08	5	5
Raw cheese – low a	-1	*			0.5 ml -1	T				
Raw cheese – low a	-1	*			0.5ml -1	T				
Raw cheese – low a	-2	5			0.1ml -1	12			5	5
Raw cheese – low a	-3	0	500	2.70	0.1ml -1	6			5	5
Raw cheese – low a	*				-2	1	900	2.95		
Raw cheese – low b	-1	*			0.5 ml -1	T				
Raw cheese – low b	-1	*			0.5ml -1	T				
Raw cheese – low b	-2	12			0.1ml -1	8			5	5
Raw cheese – low b	-3	2	1200	3.08	0.1ml -1	6			5	5
Raw cheese – low b	*				-2	0	700	2.85		
Raw cheese – low c	-1	*			0.5 ml -1	T				
Raw cheese – low c	-1	*			0.5ml -1	T				
Raw cheese – low c	-2	13			0.1ml -1	8			5	5
Raw cheese – low c	-3	1	1300	3.11	0.1ml -1	6			5	5
Raw cheese – low c	*				-2	0	700	2.85		
Raw cheese – low d	-1	*			0.5 ml -1	T				
Raw cheese – low d	-1	*			0.5ml -1	T				
Raw cheese – low d	-2	1.00E+03			0.1ml -1	10			5	5
Raw cheese – low d	-3	0	1000		0.1ml -1	5			5	5
Raw cheese – low d	*				-2	2	750	2.88		
Raw cheese – low e	-1	*			0.5 ml -1	T				
Raw cheese – low e	-1	*			0.5ml -1	T				
Raw cheese – low e	-2	21			0.1ml -1	11			5	5
Raw cheese – low e	-3	0	2100		0.1ml -1	7			5	5
Raw cheese – low e	*				-2	1	900	2.95		
Raw cheese –med a	-1	T			*					
Raw cheese –med a	-1	T			*					
Raw cheese –med a	-2	95			0.1ml -1	T				
Raw cheese –med a	-3	21			0.1ml -1	T				
Raw cheese –med a	-4	3	2200		-2	12			5	5
Raw cheese –med a	*				-3	2	12000	4.08		
Raw cheese –med b	-1	T			*					
Raw cheese –med b	-1	T			*					
Raw cheese –med b	-2	95			0.1ml -1	T				
Raw cheese –med b	-3	18			0.1ml -1	T				

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Raw cheese –med b	-4	2	1800		-2	17			5	5
Raw cheese –med b	*				-3	2	17000	4.23	2	2
Raw cheese –med c	-1	T			*					
Raw cheese –med c	-1	T			*					
Raw cheese –med c	-2	98			0.1ml -1	T				
Raw cheese –med c	-3	24			0.1ml -1	T				
Raw cheese –med c	-4	4	2600	4.41	-2	20			5	5
Raw cheese –med c	*				-3	2	20000	4.30	2	2
Raw cheese –med d	-1	T			*					
Raw cheese –med d	-1	T			*					
Raw cheese –med d	-2	110			0.1ml -1	T				
Raw cheese –med d	-3	28			0.1ml -1	T				
Raw cheese –med d	-4	3	2800	4.45	-2	18			5	5
Raw cheese –med d	*				-3	1	17000	4.23	1	1
Raw cheese –med e	-1	T			*					
Raw cheese –med e	-1	T			*					
Raw cheese –med e	-2	151			0.1ml -1	T				
Raw cheese –med e	-3	5			0.1ml -1	T				
Raw cheese –med e	-4	0	1400	4.15	-2	13			5	5
Raw cheese –med e	*				-3	0	13000	4.11		
Raw cheese - high a	-2	*			*					
Raw cheese - high a	-3	T			*					
Raw cheese - high a	-4	152			*					
Raw cheese - high a	-5	10	1500	6.18	-2	T				
Raw cheese - high a	*				-3	172				
Raw cheese - high a	*				-4	15	150000	6.18	5	5
Raw cheese - high b	-3	T			*					
Raw cheese - high b	-4	105			*					
Raw cheese - high b	-5	26	2600	6.41	-2	T				
Raw cheese - high b	*				-3	196				
Raw cheese - high b	*				-4	26	260000	6.41	5	5
Raw cheese - high c	-3	T			*					
Raw cheese - high c	-4	156			*					
Raw cheese - high c	-5	14	1400	6.15	-2	T				
Raw cheese - high c	*				-3	169				
Raw cheese - high c	*				-4	18	180000	6.26	5	5
Raw cheese - high d	-3	T			*					
Raw cheese - high d	-4	161			*					
Raw cheese - high d	-5	14	1400	6.15	-2	T				
Raw cheese - high d	*				-3	177				
Raw cheese - high d	*				-4	17	170000	6.23	5	5

	Alternative Hyserve Compact Dry XSA				Reference method :ISO 6888-1:1999					
item	Dilution 1ml	count	cfu/g	log cfu/g	Dilution	count	cfu/g	log cfu/g	no. confirms	no. +ve
Raw cheese - high e	-3	T			*					
Raw cheese - high e	-4	T			*					
Raw cheese - high e	-5	31	3100	7.49	-2	T				
Raw cheese - high e	*				-3	194				
Raw cheese - high e	*				-4	32	320000	6.51	5	5

All raw data per category are given in Excel file 2008LR14: tab Accuracy profile

ANNEX F: Summary tables accuracy profile study.

(Food) Category 1		Meat and poultry										
(Food) Type 1		RTE meats										
			Reference method result					Alternative method result				
Sample Name	(Food) item	Level	rep 1	rep 2	rep 3	rep 4	rep 5	rep 1	rep 2	rep 3	rep 4	rep 5
31	pastrami	low	1600	1600	1700	1600	1700	1100	1300	1200	880	1400
34	sliced cooked chicken	Low	1100	1700	3100	1300	1100	1200	1100	2400	900	1000
32	pastrami	Med	31000	20000	26000	26000	34000	29000	17000	26000	16000	28000
25	sliced cooked chicken	Med	26000	290000	27000	26000	26000	10000	26000	26000	28000	19000
35	pastrami	High	2500000	2400000	2800000	400000	2900000	2600000	2700000	1200000	1300000	1600000
4	sliced cooked chicken	High	1500000	1700000	180000	3100000	2200000	1400000	1500000	1700000	1400000	1100000

(Food) Category 2		Ready to eat foods										
(Food) Type 2		Cooked fish										
			Reference method result					Alternative method result				
Sample Name	(Food) item	Level	rep 1	rep 2	rep 3	rep 4	rep 5	rep 1	rep 2	rep 3	rep 4	rep 5
18	Prawns	low	1100	760	1400	955	2100	940	920	1100	840	790
27	smoked salmon	Low	2300	1700	1800	1600	3400	1400	1600	1100	1400	1400
33	Prawns	Med	25000	24000	33000	32000	18000	12000	33000	22000	45000	16000
14	smoked salmon	Med	31000	28000	27000	23000	33000	18000	13000	22000	24000	19000
28	Prawns	High	3400000	1900000	1600000	2300000	2800000	2500000	1600000	2300000	1500000	1400000
10	smoked salmon	High	3600000	3600000	2800000	3000000	3500000	2000000	3200000	2400000	230000	2800000

(Food) Category 3		Multi component										
(Food) Type 3		composite/raw ingredients										
			Reference method result					Alternative method result				
Sample Name	(Food) item	Level	rep 1	rep 2	rep 3	rep 4	rep 5	rep 1	rep 2	rep 3	rep 4	rep 5
11	Pasta salad	low	440	450	480	455	510	328	433	610	419	414
6	sandwich spread	Low	845	430	445	575	600	440	400	370	466	366
2	Pasta salad	Med	11000	13000	13000	16000	14000	8700	11000	13000	11000	15000
7	sandwich spread	Med	13000	16000	13000	15000	12000	8800	9000	8800	9200	19000
12	Pasta salad	High	610000	1200000	1100000	740000	1200000	550000	910000	980000	500000	910000
24	sandwich spread	High	1300000	1300000	1000000	1100000	1300000	820000	1900000	680000	910000	750000

(Food) Category 4			dried/dehydrated foods									
(Food) Type 4			Powders									
			Reference method result					Alternative method result				
Sample Name	(Food) item	Level	rep 1	rep 2	rep 3	rep 4	rep 5	rep 1	rep 2	rep 3	rep 4	rep 5
13	Ready to cook pasta	low	690	765	720	1000	950	500	660	380	890	640
5	infant cereal	Low	515	345	485	645	815	390	524	550	550	650
26	Ready to cook pasta	Med	26000	21000	23000	25000	16000	23000	12000	26000	14000	13000
9	infant cereal	Med	16000	9100	9600	11000	8700	9600	7100	8900	8900	7500
39	Ready to cook pasta	High	1200000	2000000	2300000	1400000	3100000	890000	1400000	1700000	1200000	2500000
38	infant cereal	High	1400000	880000	1100000	820000	820000	1600000	810000	940000	660000	730000

(Food) Category 8			Dairy									
(Food) Type 8			Dairy desserts									
			Reference method result					Alternative method result				
Sample Name	(Food) item	Level	rep 1	rep 2	rep 3	rep 4	rep 5	rep 1	rep 2	rep 3	rep 4	rep 5
36	Chilled custard	low	420	335	440	525	475	200	300	570	240	300
8	raw milk cheese	Low	900	700	700	750	900	500	1200	1300	1000	2100
17	Chilled custard	Med	6800	2100	25000	9200	6400	3400	6300	8600	4400	3200
16	raw milk cheese	Med	12000	17000	2000	17000	13000	22000	18000	26000	28000	14000
29	Chilled custard	High	1000000	1200000	1100000	1100000	1200000	620000	690000	630000	680000	760000
30	raw milk cheese	High	1500000	26000000	1800000	1700000	3200000	1500000	2600000	1400000	1400000	3100000

(Food) Category 1			environmental									
(Food) Type 1			surface samples									
			Reference method					Alternative method				
Sample Name	(Food) item	Level	rep 1	rep 2	rep 3	rep 4	rep 5	rep 1	rep 2	rep 3	rep 4	rep 5
2 a-e	stainless steel	low	114	30	7	88	81	409	22	3	105	145
5 a-e	plastic chopping board	low	210	268	377	350	400	727	355	245	336	103
3 a-e	stainless steel	intermediate	4000	2900	2000	2600	2100	3500	3500	2100	3500	1300
6 a-e	plastic chopping board	intermediate	2300	7500	2100	4100	7300	3400	5500	2500	1500	4500
1 a-e	stainless steel	high	22000	14000	13000	24000	11000	15000	8300	6500	11000	5000
4 a-e	plastic chopping board	high	20000	26000	30000	47000	22000	12000	18000	25000	29000	24000

(Food) Category 4			pet food and									
(Food) Type 4			dry food									
Sample Name	(Food) item	Level	Reference method					Alternative method				
			rep 1	rep 2	rep 3	rep 4	rep 5	rep 1	rep 2	rep 3	rep 4	rep 5
7 a-e	kibble for dogs	low	620	646	750	577	596	582	609	595	645	691
10 a-e	cat treats	low	300	1100	1200	900	700	609	473	809	673	827
11 a-e	cat treats	intermediate	88000	72000	76000	68000	63000	61000	57000	71000	43000	39000
8 a-e	kibble for dogs	intermediate	200000	280000	270000	250000	270000	140000	150000	190000	240000	200000
12 a-e	cat treats	high	1200000	1200000	1100000	1400000	1200000	640000	500000	610000	650000	670000
9 a-e	kibble for dogs	high	1600000	1600000	1400000	1200000	1000000	1100000	990000	1000000	870000	680000

Annex G G – Inclusivity / Exclusivity: raw data Inclusivity strains

Note: Shaded cells represent non-detection of an inclusivity strain by one or both methods

Inclusivity strains

		Alternative Hyserve Compact Dry XSA		Reference method: ISO 6888-1:1999			Confirmation Coagulase		Confirmation RFBP	Non-selective	
strai	Dilutio	Count	cfu/g	Dilution		cfu/g	4h	24h		Count	cfu/g
409	-6	79		-5	94		+		+	129	
	-7	13		-6	12					9	
	-8	1	9.10E+07	-7	0	9.60E+07				2	1.30E+08
713	-6	42		-5	T		+		+	129	
	-7	1		-6	30					13	
	-8	0	3.90E+07	-7	1	2.80E+08				1	1.40E+08
1197	-6	T		-5	T		+		+	T	
	-7	46		-6	65					61	
	-8	1	4.30E+08	-7	12	7.00E+08				8	6.30E+08
1208	-6	T		-5	T		+		+	T	
	-7	22		-6	52					39	
	-8	0	2.20E+08	-7	6	5.30E+08				5	4.00E+08
1210	-6	T		-5	T		WEAK	+	+	T	
	-7	36		-6	37					26	
	-8	2	3.50E+08	-7	4	3.70E+08				5	2.80E+08
1211	-6	T		-5	T		+		+	T	
	-7	22		-6	27					30	
	-8	5	2.50E+08	-7	6	3.00E+08				3	3.00E+08
1213	-6	T		-5	T		+		+	T	
	-7	47		-6	54					34	
	-8	7	4.90E+08	-7	7	5.60E+08				6	3.60E+08
1214	-6	91		-5	T		WEAK	+	+	T	
	-7	8		-6	20					26	
	-8	2	9.00E+07	-7	1	1.90E+08				1	2.50E+08
1215	-6	129		-5	T		+		+	T	
	-7	9		-6	37					35	
	-8	3	1.30E+08	-7	7	4.00E+08				3	3.50E+08
1216	-6	T		-5	T		+		+	T	
	-7	30		-6	39					31	
	-8	3	3.00E+08	-7	11	4.60E+08				1	2.90E+08

1217	-6	121		-5	T		WEAK	+	+	T	
	-7	9		-6	30					47	
	-8	1	1.20E+08	-7	4	3.10E+08				1	4.40E+08
1219	-6	121		-5	T		+		+	T	
	-7	14		-6	21					16	
	-8	1	1.20E+08	-7	1	2.00E+08				3	1.70E+08
1223	-6	T		-5	T		+		+	T	
	-7	30		-6	52					32	
	-8	3	3.00E+08	-7	1	4.80E+08				4	3.30E+08
1224	-6	95		-5	T		WEAK	+	+	T	
	-7	13		-6	25					21	
	-8	1	1.10E+08	-7	1	2.40E+08				3	2.20E+08
1225	-6	124		-5	T		+		+	T	
	-7	11		-6	40					50	
	-8	2	1.30E+08	-7	0	4.00E+08				3	4.80E+08
1227	-6	81		-5	T		+		+	T	
	-7	9		-6	21					31	
	-8	0	8.20E+07	-7	3	2.20E+08				1	2.90E+08
1228	-6	24		-5	75		+		+	82	
	-7	1		-6	7					13	
	-8	0	2.30E+07	-7	0	7.50E+07				1	8.60E+07
1230	-6	T		-5	T		+		+	T	
	-7	15		-6	23					23	
	-8	1	1.50E+08	-7	3	2.40E+08				3	2.40E+08
1231	-6	0		-5	129		+		+	103	
	-7	11		-6	14					16	
	-8	65	6.50E+09	-7	2	1.30E+08				0	1.20E+08
1232	-6	18		-5	71		+		+	60	
	-7	6		-6	4					4	
	-8	0	2.20E+07	-7	0	6.80E+07				1	5.80E+07
1234	-6	T		-5	T		WEAK	+	+	T	
	-7	22		-6	35					26	
	-8	4	2.40E+08	-7	10	4.10E+08				5	2.80E+08
1235	-6	52		-5	T		+		+	T	
	-7	4		-6	23					52	
	-8	1	5.10E+07	-7	0	2.30E+08				1	4.80E+08
1236	-6	106		-5	T		-	-	SMALL HALO -	T	
	-7	6		-6	28					33	
	-8	1	1.00E+08	-7	0	2.80E+08				2	3.20E+08

1238	-6	22		-5	55		+		+	93	
	-7	3		-6	3					2	
	-8	0	2.30E+07	-7	0	5.30E+07				1	8.60E+07
1239	-6	113		-5	125		+		+	T	
	-7	14		-6	13					18	
	-8	1	1.20E+08	-7	2	1.30E+08				1	1.70E+08
1240	-6	T		-5	T		+		+	T	
	-7	17		-6	38					32	
	-8	2	1.70E+08	-7	4	3.80E+08				2	3.10E+08
1241	-6	88		-5	T		-	-	-	T	
	-7	6		-6	34					30	
	-8	1	8.60E+07	-7	4	3.50E+08				2	2.90E+08
1242	-6	T		-5	T		+		+	T	
	-7	25		-6	50					17	
	-8	5	2.70E+08	-7	4	4.90E+08				4	1.90E+08
1244	-6	T		-5	T		+		+	T	
	-7	31		-6	40					33	
	-8	4	3.20E+08	-7	4	4.00E+08				9	3.80E+08
1246	-6	T		-5	T		+		+	T	
	-7	T		-6	T					T	
	-8	178	1.80E+10	-7	233	2.30E+10				192	1.90E+09
1446	-6	61		-5	T		+		+	T	
	-7	6		-6	22					20	
	-8	0	6.10E+07	-7	4	2.40E+08				2	2.00E+08
1605	-6	T		-5	T		WEAK	+	+	T	
	-7	37		-6	46					47	
	-8	2	3.60E+08	-7	4	4.60E+08				2	4.50E+08
1991	-6	T		-5	T		+		+	T	
	-7	31		-6	112					71	
	-8	3	3.10E+08	-7	12	1.10E+09				7	7.10E+08
1992	-6	T		-5	T		+		+	T	
	-7	30		-6	43					33	
	-8	1	2.80E+08	-7	3	4.20E+08				0	3.30E+08
1993	-6	T		-5	T		+		+	T	
	-7	36		-6	45					48	
	-8	5	3.70E+08	-7	4	4.60E+08				9	5.20E+08
1994	-6	T		-5	T		+		+	T	
	-7	16		-6	37					31	
	-8	0	1.60E+08	-7	2	3.60E+08				6	3.50E+08

2078	-6	68		-5	T		+		+	T	
	-7	9		-6	22					181	
	-8	0	7.00E+07	-7	2	2.20E+08				1	1.70E+09
2095	-6	T		-5	T		+		+	T	
	-7	21		-6	31					29	
	-8	3	2.20E+08	-7	1	2.90E+08				6	3.20E+08
2096	-6	114		-5	T		+		+	T	
	-7	6		-6	21					20	
	-8	2	1.10E+08	-7	1	2.00E+08				5	2.30E+08
3026	-6	T		-5	T		+		+	T	
	-7	32		-6	54					70	
	-8	3	3.20E+08	-7	7	5.60E+08				1	6.50E+08
3098	-6	68		-5	154		+		+	T	
	-7	10		-6	14					22	
	-8	1	7.10E+07	-7	4	1.50E+08				3	2.30E+08
4105	-6	T		-5	T		+		+	T	
	-7	20		-6	51					29	
	-8	1	1.90E+08	-7	6	5.20E+08				4	3.00E+08
5932	-6	92		-5	T		+		+	T	
	-7	8		-6	31					30	
	-8	0	9.10E+07	-7	1	3.00E+08				3	3.00E+08
1563	-6	T		-5	T		+		+	T	
	-7	19		-6	25					47	
	-8	3	2.00E+08	-7	4	2.60E+08				4	4.60E+08
1594	-6	79		-5	150		+		+	T	
	-7	5		-6	14					14	
	-8	0	7.60E+07	-7	0	1.50E+08				1	1.40E+08
3097	-6	118		-5	T		+		+	T	
	-7	12		-6	22					16	
	-8	3	1.20E+08	-7	2	2.20E+08				3	1.70E+08
1178	-6	68		-5	T					T	
	-7	4		-6	51		+		+	20	
	-8	0	6.60E+07	-7	1	4.70E+08				2	2.00E+08
1183	-6	42		-5	T					T	
	-7	3		-6	37		+		+	26	
	-8	0	4.10E+07	-7	1	3.50E+08				4	2.70E+08
1185	-6	T		-5	T		+		+	T	
	-7	15		-6	27					20	
	-8	0	1.50E+08	-7	2	2.60E+08				1	1.90E+08
3251	-6	23		-5	83		+		+	113	

	-7	1		-6	12				13	
	-8	0	2.20E+08	-7	1	8.60E+07			2	1.20E+08
7028	-6	T		-5	T		+	+	101	
	-7	20		-6	33				9	
	-8	1	1.90E+08	-7	1	3.10E+08			0	1.00E+08

Exclusivity strains

strain	ID	Dilution	Reference method :ISO 6888-1:1999		Confirm Coagulase		Confirm	Alternative Hyserve Compact Dry XSA		Non selective	
			Count	cfu/g	4h	24h		XSA	cfu/g	TSA 37/44h	cfu/g
<i>Staph Delphini</i>	NCIMB 8709										
		-6	26					109		60	
		-7	4					10		6	6.00E+08
		-8	0	2.70E+07	+		+	1	1.10E+08	0	
<i>Streptococcus pyogenes</i>	NCIMB 13285	-5	0					0		T	
		-6	0	<1.0E+06				0	<1.0E+05	35	3.50E+07
<i>Staph Delphini</i>	NCIMB 13206	-5	T					0		T	
		-6	18 (at)	1.80E+08	+		+	0	<1.0E+05	187	1.90E+08
<i>Staph Saprophyticus</i>	NCIMB 8711										
		-5	16(A T)					0			
		-6		<1.0E+06	-	-	-	0	<1.0E+05	62	6.20E+08
<i>Staph epidermis</i>	NCIMB 8853										
		-5	0					0			
		-6	0	<1.0E+06				0	<1.0E+05	804	8.00E+08
<i>Lactobacillus brevis</i>	NCIMB 4036										
		-6	0								
		-7	0					0	0	0	
		-8	0	<1.0E+06				0	<1.0E+06	0	<1.0E+06
<i>Bacillus cereus</i>	1761	-5	0					0		126	
		-6	0	<1.0E+06				0	<1.0E+05	12	1.20E+07
<i>Bacillus subtilis</i>	4112	-5	0					0		72	
		-6	0	<1.0E+06				0	<1.0E+05	10	7.50E+07
<i>Carnobacterium divergens</i>	3910										
		-6	0					T		T	
		-7	0					76		42	
		-8	0	<1E6				2	7.10E+08	2	4.00E+08
<i>Enterobacter agglomerans</i>	1490	-5	0					0		T	

strain	ID	Dilution	Reference method :ISO 6888-1:1999		Confirm Coagulase		Confirm	Alternative Hyserve Compact Dry XSA		Non selective	
			Count	cfu/g	4h	24h		XSA	cfu/g	TSA 37/44h	cfu/g
	CRA	-6	0	<1.0E+06				0	<1.0E+05	115	1.20E+08
<i>Enterococcus faecalis</i>	16049	-5	167		-	-	-	0		T	
		-6	8	1.60E+08				0	<1.0E+05	213	2.10E+08
<i>E.coli</i>	12441	-5	0					0		T	
		-6	0	<1.0E+06				0	<1.0E+05	293	2.90E+08
<i>Lactobacillus gasserii</i>	6804	-5	0					0			
		-6	0	<1.0E+06				0	<1.0E+05	T	
										1340	1.30E+09
<i>Leuconostoc mesenteroides</i>	16022	-5	0					0			
		-6	0	<1.0E+06				0	<1.0E+05	T	
										19	1.90E+07
<i>Listeria monocytogenes</i>	1104	-5	5		-	-		0			
		-6	0	5.00E+07				0	<1.0E+05	T	
										1000	1.00E+09
<i>Micrococcus luteus</i>	16258	-5	0					0			
		-6	0	<1.0E+06				0	<1.0E+05	95	
										11	9.60E+06
<i>Pediococcus pentosaceus</i>	16030	-5	0					0		T	
		-6	0	<1.0E+06				0	<1.0E+05	75	7.50E+07
<i>Pseudomonas aeruginosa</i>	8299	-5	0					0		T	
		-6	0	<1.0E+06				0	<1.0E+05	504	5.00E+08
<i>Salmonella Enteritidis</i>	3505	-5	0					0		T	
		-6	0	<1.0E+06				0	<1.0E+05	430	4.30E+08
<i>Salmonella Typhimurium</i>	1960	-5	0					0		T	
		-6	0	<1.0E+06				0	<1.0E+05	900	9.00E+08
<i>Staphylococcus caprae</i>	265	-5	T		-	-	-	0		T	
		-6	22	2.20E+08				0	<1.0E+05	189	1.90E+08
<i>Staphylococcus carnosus</i>	284	-5	46		-	-	-	0		T	
		-6	3	4.50E+07				0	<1.0E+05	34	3.40E+07
<i>Staphylococcus cohnii</i>	6714	-5	T					T		T	
		-6	53	5.30E+08	+		+	229	2.30E+08	356	3.60E+08
<i>Staphylococcus hominis</i>	1527	-5	39 (AT)		-	-	-	0		T	
		-6	3 (AT)	3.80E+07				0	<1.0E+05	99	9.90E+07
<i>Staphylococcus intermedius</i>	254	-5	T					0		T	

strain	ID	Dilution	Reference method :ISO 6888-1:1999		Confirm Coagulase		Confirm	Alternative Hyserve Compact Dry XSA		Non selective	
			Count	cfu/g	4h	24h		XSA	cfu/g	TSA 37/44h	cfu/g
	CRA	-6	15	1.50E+08	-	+	-	0	<1.0E+05	183	1.80E+08
<i>Staphylococcus piscifermentans</i>	5929	-5	11 +40		-	-	-	0		T	
		-6	17	1.70E+08				0	<1.0E+05	103	1.00E+08
<i>Staphylococcus simulans</i>	244	-5	0					0		T	
		-6	0	<1.0E+06				0	<1.0E+05	143	1.40E+08
<i>Staphylococcus warneri</i>	262	-5	46		-	-	-	0		T	
		-6	4	4.50E+07				0	<1.0E+05	57	5.70E+07
<i>Staphylococcus xylosus</i>	266	-5	52		-	-	-	0		T	
		-6	5	5.20E+07				0	<1.0E+05	55	5.00E+07
<i>Streptococcus lactis</i>	3928	-5	T					0		T	
		-6	69 (AT)	6.90E+08	-	-	-	0	<1.0E+05	670	6.70E+08
<i>Brochothrix thermospacta</i>	16019										
		-5	0					0		T	
		-6	0	<1.0E+06				0	<1.0E+05	58	5.80E+07