

Summary of Results

External Quality Assessment for Food Microbiology

Food Law Scheme

Distribution Number: FL10

Sample Numbers: FL028, FL029 & FL030

| | |
|---|--|
| Distribution Date: | September 2009 |
| Results Due: | 2 October 2009 |
| Report Date: | 16 October 2009 |
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This Scheme provides external quality assessment samples for laboratories that examine foods products in accordance with European legislation specified in Regulation (EC) 1441/2007 (which amended Regulation (EC) No. 2073/2005 and came into force on 25 December 2007) Microbiological Criteria for Foodstuffs associated with Regulation (EC) 852/2004

If you require further information on the scheme, samples, quality control, how results are assessed, how scores are allocated, interpretation of low scores and performance assessments please refer to the 'General Information Section' on pages 9 – 10.

Participants are reminded that the purpose of scoring is to draw attention to incorrect or outlying results. Participants who report outlying results for enumerations on single occasions only should not be alarmed, although they should still assess the reason(s) for the outlying result.

All participants are reminded that incorrect or incomplete identification of pathogens from food samples could have serious public health implications. Similarly, the levels of micro-organisms reported in the sample may affect the subsequent outcome for the product.

If you experienced problems with these examinations please refer to the 'Troubleshooting' PDF at <http://www.hpa.org.uk/eqa/foodlaw>

Please contact FEPTU staff for advice and information. Contact details are provided below.

Information about other Health Protection Agency functions and services is available from the web-site www.hpa.org.uk

Contact Details:

| | | |
|--|---|--|
| Repeat samples | Carmen Gomes or Nic Day | Tel: +44 (0)20 8327 7119 |
| Data analysis | Heena Shah or Dr Nicola Lang | Fax: +44 (0)20 8200 8264 |
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| General comments and complaints | Dr Nicola Lang or Julie Russell | |
| Scheme consultants | Melody Greenwood Dr Christine Little | |

Sample: FL028

Sample Details: Cheese made from raw milk placed on the market during the shelf life.

Sample Request: Test to determine whether this sample complies with the **food safety criteria** stipulated in Commission Regulation (EC) No. 2073/2005 as amended by 1441/2007.

Contents:

- *Citrobacter freundii* (10^3)
- *Enterococcus faecalis* (10^3)
- *Escherichia coli* (10^2)
- *Lactobacillus plantarum* (10^5)
- *Listeria monocytogenes* (10^1)
- *Salmonella* Derby 1,4,[5],12:f,g:[1,2] (10)

All levels are presented as colony forming units (cfu) per ml reconstituted sample

Required Examinations: *L.monocytogenes* enumeration and *Salmonella* detection

Examination 1 Expected Results:

| Examination 1 | Expected Result | Your Result | Your score |
|---|---|-------------|------------|
| Name of examination | <i>L.monocytogenes</i> enumeration | | |
| Stipulated method | ISO 11290-2* | | |
| Amount of sample examined | 1/10 suspension | | |
| No. of samples from a batch required for compliance | 5 (n = 5) | | |
| Expected range | 16 – 1.6×10^2 cfu per g | | |
| Limits for compliance | m = 100 cfu/g; M = 100 cfu/g (c = 0) | | |
| Conclusion about the batch from result | Your conclusion has been scored in relation to your reported result | | |

* The most recent edition of the standard should be used

Results returned

Total score out of

Examination 1 Comments on Performance:

| | | |
|---|---|--|
| <i>L.monocytogenes</i> | Total participants enumerating for <i>L.monocytogenes</i> | 30 |
| Refer to Fig. 1 (page 6) | Total participants enumerating for <i>Listeria</i> spp. | 3 |
| | Participants' median | 52 cfu g ⁻¹ (1.70 log ₁₀) |
| | Participants' mean | 52 cfu g ⁻¹ (1.70 log ₁₀) |
| | Standard deviation of participants' results | 0.17 cfu g ⁻¹ |
| | FEPTU QC median (ISO 11290-2) | 85 cfu g ⁻¹ (1.95 log ₁₀) |
| Total sent sample | | 38 |
| Non-returns | | 1 |
| Returned as 'not examined' for this sample | | 4 |

Sample: FL028

Sample Details: Cheese made from raw milk placed on the market during the shelf life.

Sample Request: Test to determine whether this sample complies with the **food safety criteria** stipulated in Commission Regulation (EC) No. 2073/2005 as amended by 1441/2007.

Contents:

- *Citrobacter freundii* (10^3)
- *Enterococcus faecalis* (10^3)
- *Escherichia coli* (10^2)
- *Lactobacillus plantarum* (10^5)
- *Listeria monocytogenes* (10^1)
- *Salmonella* Derby 1,4,[5],12:f,g:[1,2] (10)

All levels are presented as colony forming units (cfu) per ml reconstituted sample

Required Examinations: *L.monocytogenes* enumeration and *Salmonella* detection

Examination 2 Expected Results:

| Examination 1 | Expected Result | Your Result | Your score |
|---|---|-------------|------------|
| Name of examination | <i>Salmonella</i> detection | | |
| Stipulated method | ISO 6579* | | |
| Amount of sample examined | 25g | | |
| No. of samples from a batch required for compliance | 5 (n = 5) | | |
| Expected range | Present | | |
| Limits for compliance | Absence in 25g (c = 0) | | |
| Conclusion about the batch from result | Your conclusion has been scored in relation to your reported result | | |

* The most recent edition of the standard should be used

Results returned

Total score out of

Examination 2 Comments on Performance:

| | | |
|-----------------------------------|---|-----------|
| Salmonella sp. | Total participants reporting for <i>Salmonella</i> sp. | 36 |
| | Participants reporting correctly the presence of <i>Salmonella</i> sp. | 36 (100%) |
| Total sent sample | | 38 |
| Non-returns | | 1 |
| Returned as 'not examined' | | 1 |

Sample: FL029

Sample Details: Cheese made from raw milk tested two to three days after production.

Sample Request: Test to determine whether this sample complies with the **process hygiene criteria** stipulated in Commission Regulation (EC) No. 2073/2005 as amended by 1441/2007.

Contents:

- *Enterococcus faecalis* (10^3)
- *Lactococcus lactis* (10^5)
- *Lactobacillus plantarum* (10^5)
- *Staphylococcus epidermidis* (10^3)

All levels are presented as colony forming units (cfu) per ml reconstituted sample

Required Examinations: Coagulase-positive staphylococci enumeration

Examination 1 Expected Results:

| Examination 1 | Expected Result | Your Result | Your score |
|---|---|-------------|------------|
| Name of examination | Coagulase-positive staphylococci enumeration | | |
| Stipulated method | ISO 6888 – 2* | | |
| Amount of sample examined | 1/10 suspension | | |
| No. of samples from a batch required for compliance | 5 (n = 5) | | |
| Expected range | <10 cfu per g | | |
| Limits for compliance | m = 10^4 cfu/g; M = 10^5 cfu/g (c = 2) | | |
| Conclusion about the batch from result | Your conclusion has been scored in relation to your reported result | | |

* The most recent edition of the standard should be used

Results returned

Total score out of

Examination 1 Comments on Performance:

| | | |
|---|---|----|
| Coagulase-positive staphylococci | Total participants enumerating for coagulase-positive staphylococci | 32 |
| | Total participants enumerating for <i>Staphylococcus aureus</i> | 3 |
| Total sent sample | | 38 |
| Non-returns | | 1 |
| Returned as 'not examined' for this sample | | 1 |

Examination 2 Specific Comments:

- This sample required examination in compliance with the **process hygiene criteria**. However, **one** participant examined for *L.monocytogenes*; this test is not required to determine compliance with the **process hygiene criteria**.
- **Two** participants reported incorrectly the presence of coagulase-positive staphylococci.
- **One** participant examined this sample additionally for *L.monocytogenes*, which is not required to determine compliance with the **process hygiene criteria**.

Sample: FL030

Sample Details: Butter made from raw milk taken at the end of the manufacturing process.

Sample Request: Test to determine whether this sample complies with the **process hygiene criteria** stipulated in Commission Regulation (EC) No. 2073/2005 as amended by 1441/2007.

Contents:

- *Citrobacter freundii* (10^4)
- *Escherichia coli* (10^{2-3})
- *Enterococcus faecalis* (10^4)
- *Lactococcus lactis* (10^6)

All levels are presented as colony forming units (cfu) per ml reconstituted sample

Required Examinations: *E.coli* enumeration

Examination 1 Expected Results:

| Examination 1 | Expected Result | Your Result | Your score |
|---|---|---------------------------|------------|
| Name of examination | <i>E.coli</i> enumeration | | |
| Stipulated method | ISO 16649-1 or 2* | | |
| Amount of sample examined | 1/10 suspension | | |
| No. of samples from a batch required for compliance | 5 (n = 5) | | |
| Expected range | $1.2 \times 10^2 - 3.0 \times 10^3$ cfu per g | | |
| Limits for compliance | m = 10 cfu/g; M = 100 cfu/g (c = 2) | | |
| Conclusion about the batch from result | Your conclusion has been scored in relation to your reported result | | |
| | | Results returned | |
| | | Total score out of | |

* The most recent edition of the standard should be used

Examination 1 Comments on Performance:

| | | |
|--|---|--|
| <i>E.coli</i> | Total participants enumerating for <i>E.coli</i> | 36 |
| Refer to Fig. 2 (page 7) | Participants reporting a definitive count | |
| | <ul style="list-style-type: none"> • ISO 16649-1 (2) • ISO 16649-2 (24) • ISO 16649 used but part 1 or 2 not specified (5) • Spread plate method (3) • Other (2) | |
| | Participants reporting a censored value | 1 (1 high) |
| | Participants' median | 6.0×10^2 cfu g ⁻¹ (2.80 log ₁₀) |
| | No. of outlying counts | 4 (3 low / 1 high) |
| | Participants' mean | 5.6×10^2 cfu g ⁻¹ (2.75 log ₁₀) |
| | Standard deviation of participants' results | 0.35 cfu g ⁻¹ |
| | FEPTU QC medians | |
| | <ul style="list-style-type: none"> • ISO 16649-1 • ISO 16649-2 | 3.3×10^3 cfu g ⁻¹ (3.50 log ₁₀) 2.7×10^2 cfu g ⁻¹ (2.45 log ₁₀) |
| Total sent sample | | 38 |
| Non-returns | | 1 |
| Returned as 'not examined' for this examination | | 1 |

Examination 1 Specific Comments:

- **Two** participants examined this sample additionally for *L.monocytogenes*, which is not required to determine compliance with the **process hygiene criteria**.

Fig. 1: FL028 - *L.monocytogenes* Results

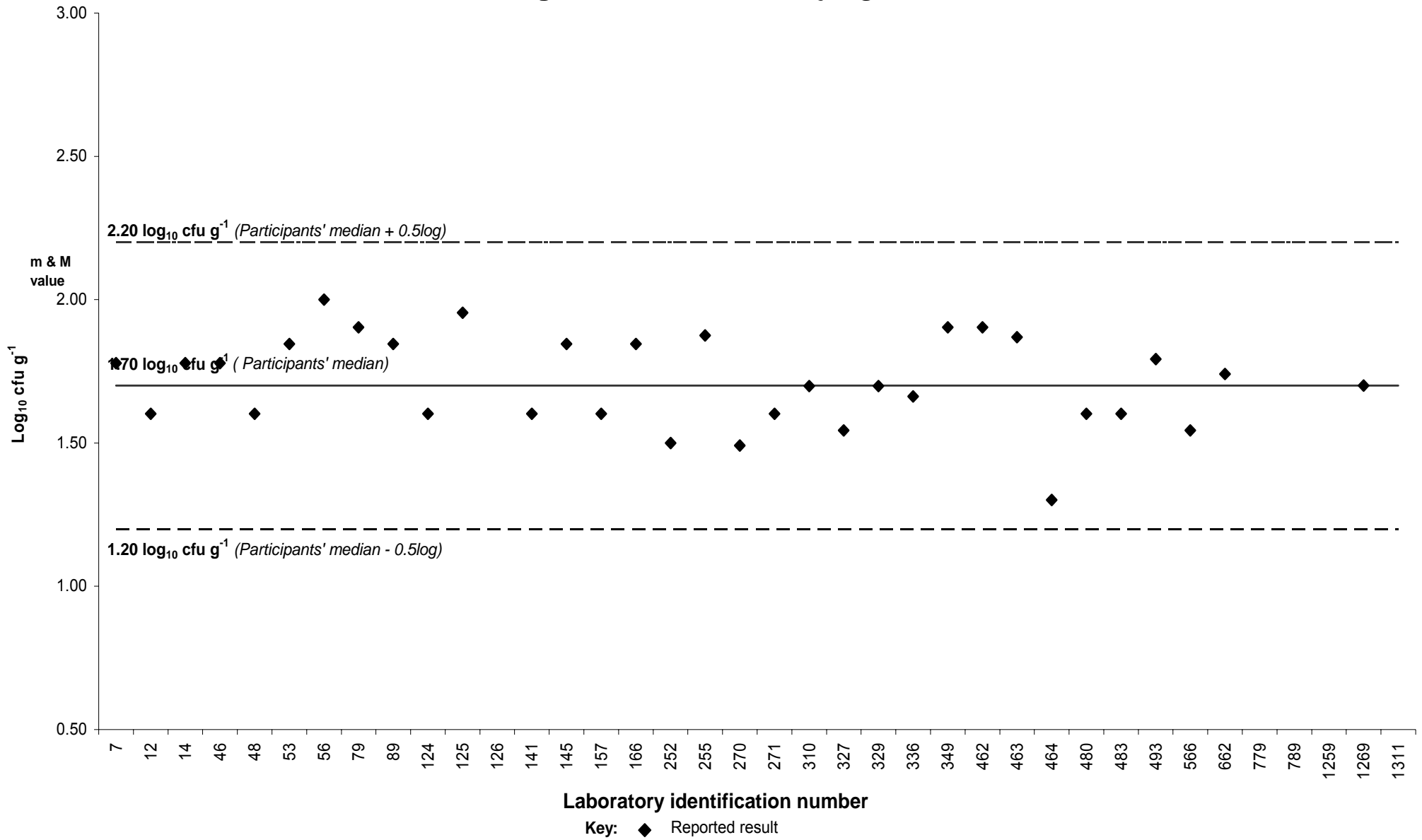
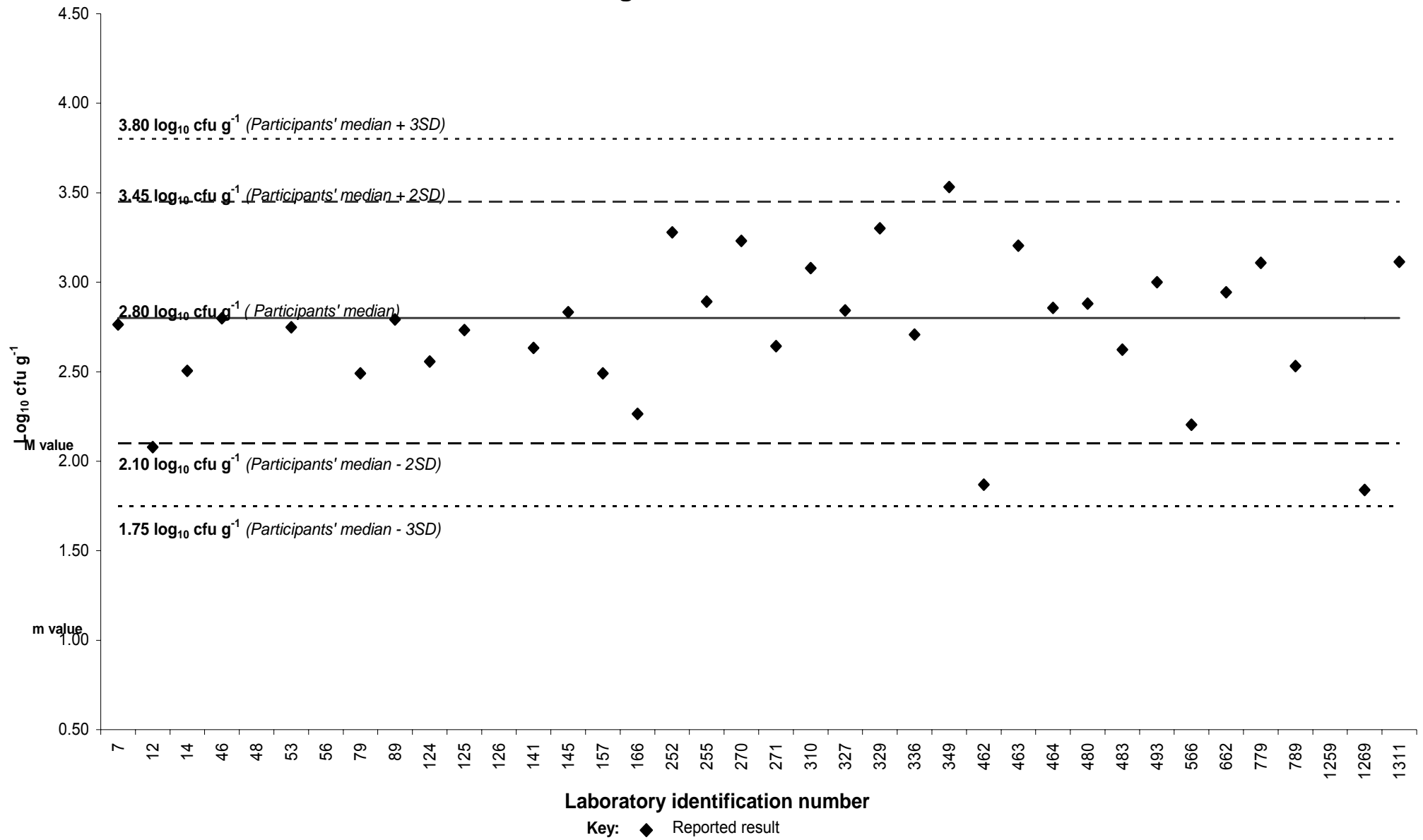


Fig. 2: FL030 - *E.coli* Results

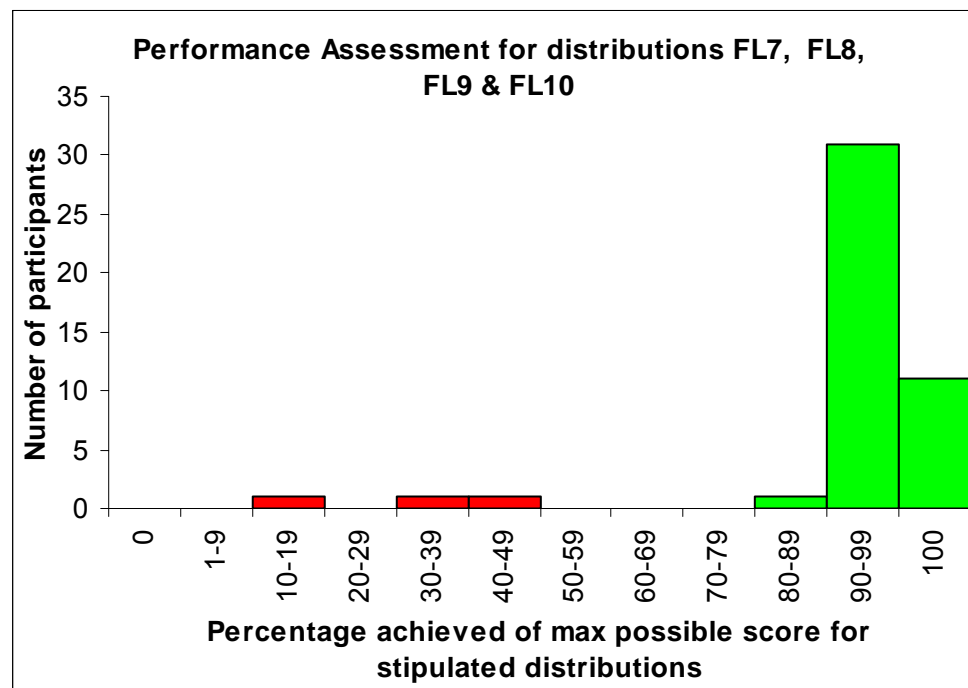


Performance Assessment Sheet

Performance assessments are designed to identify laboratories with on-going problems with their examinations and are undertaken after every distribution. Scores are allocated to results reported for every sample to help assess participants' performance.

Cumulative scores are calculated for every participant for all examinations for the current and previous three distributions. Participants' cumulative scores for each of the examinations are compared with the maximum possible scores after every distribution.

| Distribution | Sample | Examination | Your score | Your % |
|--------------|--------|----------------------------------|------------|--------|
| FL7 | FL019 | <i>Salmonella</i> sp. | | |
| | FL019 | <i>L.monocytogenes</i> | | |
| | FL020 | Enterobacteriaceae | | |
| | FL020 | <i>B.cereus</i> | | |
| | FL021 | <i>E.coli</i> | | |
| FL8 | FL022 | <i>L.monocytogenes</i> | | |
| | FL023 | <i>L.monocytogenes</i> | | |
| | FL023 | <i>Salmonella</i> sp. | | |
| | FL024 | <i>E.coli</i> | | |
| | FL024 | Coagulase-positive staphylococci | | |
| FL9 | FL025 | <i>Salmonella</i> sp. | | |
| | FL026 | Aerobic colony count | | |
| | FL026 | <i>E.coli</i> | | |
| | FL027 | <i>Salmonella</i> sp. | | |
| | FL027 | Aerobic colony count | | |
| | FL027 | Enterobacteriaceae | | |
| FL10 | FL028 | <i>L.monocytogenes</i> | | |
| | FL028 | <i>Salmonella</i> sp. | | |
| | FL029 | Coagulase-positive staphylococci | | |
| | FL030 | <i>E.coli</i> | | |



Performance Assessment Comment:

Laboratories that achieve <70% of the maximum possible score are likely to be experiencing significant problems with their tests and are advised to a) refer to the relevant sample reports for specific comments b) refer to the hpa website (www.hpa.org.uk/eqa/foodlaw) c) contact the organisers for advice.

General Information

Scheme: Food Law

Sample Type: LENTICULE discs

Safety Data Sheet: Contact the Organisers or www.hpa.org.uk/eqa/foodlaw

Examinations: In accordance with the EC Microbiological Criteria for Foodstuffs (EC) Regulation 2073/2005 amended by (EC) 1441/2007.

Enumerations:

Aerobic colony count

B.cereus

Coagulase-positive staphylococci

E.coli

Enterobacteriaceae

L.monocytogenes

Presence/absence:

Listeria monocytogenes

Salmonella spp.

Cronobacter sakazakii

Most Probable Number (MPN) Estimations:

Enterobacteriaceae

Escherichia coli

Quality Control:

Minimum of 10 samples, selected randomly from the batch and examined for the test parameters as indicated on the request/report forms, using the relevant method as stipulated in Annex 1 of Reg 1441/2007.

Results Analyses and Scores:

Scores are allocated for **each examination** as follows:

| | Expected result | Score allocated |
|--|--|-----------------|
| Name of examination | Correct examination | 1 |
| Stipulated method | Not scored | |
| Amount of sample examined | Not scored | |
| No. of samples from a batch required for compliance | Correct value | 1 |
| Expected range | Correct presence/absence or within range* <i>Outlier</i> | 3 2 or 0 |
| Limits for compliance | Not scored | |
| Conclusion about the batch from result | Correct conclusion Partial conclusion e.g. about sample not batch No conclusion or misleading conclusion | 2 1 0 |
| Return result | | 1 |
| Max possible score | | 8 points |

*see scoring of enumerations

Scoring of enumerations

(Aerobic colony count (ACC), *B.cereus*, coagulase-positive staphylococci, *E.coli*, Enterobacteriaceae, *L.monocytogenes*)

The expected range for enumerations are determined from the median result reported by participants' and takes into account the following criteria: (1) median \pm 2 MAD (2) median \pm 3 MAD and (3) median \pm 0.5 log₁₀ units.

If the range in (1) and/or (2) are less than the median \pm 0.5 log₁₀ units then the expected range is extended as described in (3). Using these criteria participants' results are defined as follows:

| | | Points |
|----------------------|--|--------|
| Expected range | within the range according to criteria (1) | 3 |
| Outlying results (1) | within the range of criteria (2) but not within criteria (1) | 2* |
| Outlying results (2) | outside the range of criteria (2) | 0* |

*If interpretation of an outlying result affects the outcome for the product in relation to the Directive standards/guidelines then the lower score indicated is allocated.

MAD is the median absolute deviation from the median value and is a robust estimate of the standard deviation (SD). It is only possible to calculate a precise estimate of the SD if more than 20 participants report enumeration results.

If a low censored value (< value) arises by chance because the target organism(s) or group is present at a low level then the maximum score of **three** points is allocated.

Scoring of MPN values

The expected range for enterobacteriaceae MPN result is determined from the median result reported by participants' \pm 3 standard deviations (SD). Outlying results are defined as follows:

| | | Points |
|----------------------|------------------------------------|--------|
| Expected range | median \pm 3 SD | 3 |
| Outlying results (1) | median \pm > 3 \pm \leq 5 SD | 2* |
| Outlying results (2) | median \pm > 5 SD | 0* |

*If interpretation of an outlying result affects the outcome for the product in relation to the Directive standards/guidelines then the lower score indicated is allocated.

If an incorrect dilution or incorrect MPN (due to mis-reading of the MPN table) is reported then only **one** point is allocated.

If the sample contains low level of Enterobacteriaceae the limits for low outlying counts may fall below the limit of detection for the test, e.g. <3 or 0.3 per g. Therefore, the limits for low outlying counts cannot be applied, i.e. <3 SD or <5 SD.

Scoring of results for presence/absence tests

(*L.monocytogenes*, *Salmonella* spp. and *Enterobacter sakazakii*)

| | Points |
|--|--------|
| Fully correct result | 3 |
| Incorrect species/serogroup identification | 2 |
| False positive or false negative result | 0 |

Participants who do not return report forms or return report forms after the specified return date (late results) are allocated a score of zero.

Results charts:

Scatter graphs summarising participants' results are included where appropriate.

Performance Analyses:

- Designed to identify laboratories with ongoing problems with their examinations
- Will be undertaken after four distributions

Accreditation: The HPA Food Law EQA Scheme is accredited by the United Kingdom Accreditation Service (UKAS) to ISO/IEC Guide 43-1:1997 through assessment against ILAC G13: 2007.



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