



# Summary of Results

## External Quality Assessment for Food Microbiology

### *Staphylococcus aureus* enterotoxin Scheme

**Distribution Number:** STA012

**Sample Numbers:** ST0023, ST0024

Distribution Date:	May 2008
Results Due:	30 May 2008
Report Date:	6 June 2008
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This Scheme provides external quality assessment (EQA) samples for laboratories that examine for *Staphylococcus aureus* enterotoxin in food samples. Staphylococcal food poisoning is an intoxication due to consumption of food or beverages containing pre-formed enterotoxins (SE). *S.aureus* is known to produce at least 14 different SEs (Leloir, Y., Baron, F. and Gautier, M. (2003) *Staphylococcus aureus* and food poisoning. *Genet. Mol. Res.* 2, 63 – 76).

The samples are prepared in collaboration with staff of the Food-borne Pathogens Reference Unit, Food Safety Microbiology Laboratory, Centre for Infections, Colindale. Strains were tested using the reverse passive latex agglutination (RPLA) and a modification of a PCR-based technique. (McLauchlin, J., Narayanan G.L., Mithani, V. and O'Neill, G. (2000) The detection of enterotoxins and toxic shock syndrome genes in *Staphylococcus aureus* by polymerase chain reaction. *J. Food Protect.* 63, 479 - 488). Copies of this publication are available to participants on request.

All participants are reminded that incorrect results for detection of *S.aureus* enterotoxin isolated from food samples could have serious public health implications.

If you experienced problems with the test please refer to the 'Troubleshooting Section' on page 7 and request a repeat sample.

Scores are not allocated for results reported for the *S.aureus* enterotoxin Scheme. Comments relating to performance are included in Table 1 on pages 3 - 6.

If you require further information on the scheme, samples or quality control please refer to the 'General Information Section' on page 8, contact details of FEPTU staff for advice and information are on page 7.

Information about other Health Protection Agency functions and services is available from the web-site [www.hpa.org.uk](http://www.hpa.org.uk)

## Sample: ST0023

### Contents:

*S.aureus* (10<sup>4</sup>)

The level is presented as colony forming units (cfu) per ml reconstituted sample

### Expected Results:

Examination	Expected Result	Your Result
<i>S.aureus</i> enterotoxin	<i>S.aureus</i> enterotoxin present (Group D)	

### Comments on Performance:

Results are summarised in Table 1 (pages 3 – 6).

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<b><i>S.aureus</i> enterotoxin</b>	Total participants reporting for <i>S.aureus</i> enterotoxin	49
	Participants reporting correctly the <b>presence</b> of <i>S.aureus</i> enterotoxin (Toxin group not specified)	26
	Participants reporting correctly the <b>presence</b> of set group D	23

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<b>Total sent sample</b>	55
<b>Non-returns</b>	4
<b>Not examined</b>	2

## Sample: ST0024

### Contents:

*S.aureus* (10<sup>4</sup>)

The level is presented as colony forming units (cfu) per ml reconstituted sample

### Expected Results:

Examination	Expected Result	Your Result
<i>S.aureus</i> enterotoxin	<i>S.aureus</i> enterotoxin present (Group A)	

### Comments on Performance:

Results are summarised in Table 1 (pages 3 – 6).

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<b><i>S.aureus</i> enterotoxin</b>	Total participants reporting for <i>S.aureus</i> enterotoxin	49
	Participants reporting correctly the <b>presence</b> of <i>S.aureus</i> enterotoxin (Toxin group not specified)	24
	Participants reporting correctly the <b>presence</b> of set group A	22

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<b>Total sent sample</b>	55
<b>Non-returns</b>	4
<b>Not examined</b>	2

**Table 1** - Participants' results for samples ST0023 and ST0024  
(NE – not examined, NR – not returned)

Lab Number	ST0023	ST0024	Method used	Comment
18	Detected	Detected	TECRA set	ST0023 - Satisfactory result ST0024 - Satisfactory result
20	NR	NR		Results not returned
100	Present (Group D)	Present (Group A)	Oxoid Toxin Detection Kit	ST0023 - Satisfactory result ST0024 - Satisfactory result
126	NE	NE		Samples not examined
175	Present (Group D)	Present (Group A)	RPLA (Oxoid)	ST0023 - Satisfactory result ST0024 - Satisfactory result
212	NR	NR		Results not returned
233	Present	Present	Transia plate	ST0023 - Satisfactory result ST0024 - Satisfactory result
252	NE	NE		Samples not examined
264	Present	Present	VIDAS	ST0023 - Satisfactory result ST0024 - Satisfactory result
279	Present	Present	VIDAS	ST0023 - Satisfactory result ST0024 - Satisfactory result
291	Present	Present	Transia plate	ST0023 - Satisfactory result ST0024 - Satisfactory result
297	Present	Present	mini VIDAS	ST0023 - Satisfactory result ST0024 - Satisfactory result
310	Present	Present	TECRA	ST0023 - Satisfactory result ST0024 - Satisfactory result
355	Present (Group D)	Present (Group A)	RPLA	ST0023 - Satisfactory result ST0024 - Satisfactory result
372	Present	Present	ELISA (TECRA)	ST0023 - Satisfactory result ST0024 - Satisfactory result
378	Present	Present	VIDAS	ST0023 - Satisfactory result ST0024 - Satisfactory result

**Table 1 (cont'd)** - Participants' results for samples ST0023 and ST0024  
(NE – not examined, NR – not returned)

Lab Number	ST0023	ST0024	Method used	Comment
382	Present (Group D)	Present (Group A)	VIDAS and TECRA	ST0023 - Satisfactory result ST0024 - Satisfactory result
393	NR	NR		Results not returned
401	Present	Present	Transia and VIDAS	ST0023 - Satisfactory result ST0024 - Satisfactory result
411	Present (Group D)	Present (Group A)	VIDAS and ELISA	ST0023 - Satisfactory result ST0024 - Satisfactory result
441	Present	Present	TECRA	ST0023 - Satisfactory result ST0024 - Satisfactory result
451	Present (Group D)	Present (Group A)	RPLA (Oxoid)	ST0023 - Satisfactory result ST0024 - Satisfactory result
459	Present	Present	Transia	ST0023 - Satisfactory result ST0024 - Satisfactory result
463	Present (Group D)	Present (Group A)	VIDAS and RPLA (Oxoid)	ST0023 - Satisfactory result ST0024 - Satisfactory result
475	Present	Present		ST0023 - Satisfactory result ST0024 - Satisfactory result
511	Present (Group D)	Present (Group A)	LATEX	ST0023 - Satisfactory result ST0024 - Satisfactory result
558	Present (Group D)	Present (Group A)	RPLA (Oxoid)	ST0023 - Satisfactory result ST0024 - Satisfactory result
576	Present (Group D)	Present (Group A)	VIDAS	ST0023 - Satisfactory result ST0024 - Satisfactory result
627	Present	Present		ST0023 - Satisfactory result ST0024 - Satisfactory result
642	Present	Present		ST0023 - Satisfactory result ST0024 - Satisfactory result
644	Present (Group D)	Present (Group A)	VIDAS and Transia	ST0023 - Satisfactory result ST0024 - Satisfactory result
646	Present	Present	VIDAS	ST0023 - Satisfactory result ST0024 - Satisfactory result

**Table 1 (cont'd)** - Participants' results for samples ST0023 and ST0024  
(NE – not examined, NR – not returned)

Lab Number	ST0023	ST0024	Method used	Comment
647	Present (Group D)	Present (Group A)	VIDAS and Transia	ST0023 - Satisfactory result ST0024 - Satisfactory result
655	Present (Group D)	Present (Group A)	VIDAS and RPLA	ST0023 - Satisfactory result ST0024 - Satisfactory result
660	Present (Group D)	Present (Group A)	PCR	ST0023 - Satisfactory result ST0024 - Satisfactory result
662	Present (Group D)	Present (Group A)		ST0023 - Satisfactory result ST0024 - Satisfactory result
680	Present	Present	VIDAS	ST0023 - Satisfactory result ST0024 - Satisfactory result
712	Present	Present	ELISA (Transia plate)	ST0023 - Satisfactory result ST0024 - Satisfactory result
722	Present	Present		ST0023 - Satisfactory result ST0024 - Satisfactory result
747	Present	Present		ST0023 - Satisfactory result ST0024 - Satisfactory result
777	Present (Group D)	Present (Group A)	VIDAS	ST0023 - Satisfactory result ST0024 - Satisfactory result
823	Present (Group D)	Present (Group A)	RPLA	ST0023 - Satisfactory result ST0024 - Satisfactory result
844	NR	NR		Results not returned
848	Present (Group D)	Present (Group A)	ELISA	ST0023 - Satisfactory result ST0024 - Satisfactory result
856	Present (Group D)	Present (Group A)	Oxoid Toxin Detection Kit	ST0023 - Satisfactory result ST0024 - Satisfactory result
861	Present	Present	VIDAS	ST0023 - Satisfactory result ST0024 - Satisfactory result
863	Present (Group D)	Present (Group A)	ELISA	ST0023 - Satisfactory result ST0024 - Satisfactory result
869	Present (Group D)	Present (Group A)	ELISA	ST0023 - Satisfactory result ST0024 - Satisfactory result

**Table 1 (cont'd)** - Participants' results for samples ST0023 and ST0024  
 (NE – not examined, NR – not returned)

Lab Number	ST0023	ST0024	Method used	Comment
873	Present	Not detected		ST0023 - Satisfactory result ST0024 - Unsatisfactory result
874	Present (Group D)	Present (Group A)	Transia plate	ST0023 - Satisfactory result ST0024 - Satisfactory result
875	Present	Not detected	VIDAS	ST0023 - Satisfactory result ST0024 - Unsatisfactory result
876	Present (Group D)	Not detected	RPLA	ST0023 - Satisfactory result ST0024 - Unsatisfactory result
878	Present (Group D)	Present (Group A)		ST0023 - Satisfactory result ST0024 - Satisfactory result
880	Present	Present	VIDAS	ST0023 - Satisfactory result ST0024 - Satisfactory result
881	Present	Present	ELISA	ST0023 - Satisfactory result ST0024 - Satisfactory result
882	Present	Present	VIDAS	ST0023 - Satisfactory result ST0024 - Satisfactory result

## Troubleshooting

### Checklist for Quality:

1. **Methods**  
*Are you using a standard or validated, clearly documented method?*
2. **Culture Media**  
*Are your culture media allowing optimal isolation of the target micro-organisms? Do you have sufficiently challenging quality control procedures for your culture media?*
3. **Equipment**  
*Is all the equipment used for the procedures (incubators, refrigerators, measuring instruments, spiral platers etc.) calibrated and monitored regularly?*
4. **Staff Training**  
*Are the staff who perform the examinations fully trained and familiar with all the procedural steps?*
5. **Internal Quality Control (IQC)**  
*Do you have adequate IQC procedures in place with documented guidelines for dealing with IQC failures?*
6. **Good Laboratory Practice (GLP)**  
*Do staff adhere to GLP at all times?*  
*If cross-contamination has occurred with EQA samples it can also occur with routine food samples.*
7. **Clerical Procedures**  
*Are your laboratory numbering and clerical procedures adequate?*  
*If you have reported EQA results incorrectly this may also happen with routine food samples.*

### Repeat Samples:

Participants should, where possible, determine the reason(s) for incorrect results and request repeat samples to ensure the cause has been eradicated. Repeat samples are free of charge, provided they are dispatched with the next distribution of samples; a handling fee will be charged for immediate dispatch.

### Help and Advice:

The Scheme Organisers will help participants to resolve issues relating to the microbial testing of food samples. Participants may also contact FEPTU to discuss any issues relating to the schemes in general, data analyses or performance assessments.

### Contact Details:

<b>Repeat samples</b>	Carly Glowotz or Carmen Gomes	<b>Tel:</b> +44 (0)20 8327 7119
<b>Data analysis</b>	Heena Shah or Dr Nicola Lang	<b>Fax:</b> +44 (0)20 8200 8264
<b>Microbiological advice</b>	Dr Nicola Lang or Julie Russell	<b>E-mail:</b> foodeqa@hpa.org.uk
<b>General comments and complaints</b>	Dr Nicola Lang or Julie Russell	
<b>Scheme Consultants</b>	Prof. Eric Bolton Dr. Jim Mclauchlin	

## General Information

**Scheme:** *S.aureus* enterotoxin

**Sample Type:** Freeze-dried culture of *S.aureus* in glass vials

**Safety Data Sheet:** Contact the organisers or [www.hpa.org.uk/eqa](http://www.hpa.org.uk/eqa)

**Examinations:** Detection of *S.aureus* enterotoxin

**FEPTU Quality Control:** Minimum of 10 vials, selected randomly from the batch are examined for the test parameters as indicated on the request/report forms, using a range of Health Protection Agency (HPA) methods which are based on ISO methods. Detection of the *S.aureus* toxin gene is by PCR.

**Commercial Kits:** RPLA kits are normally able to detect only SEA, SEB, SEC and SED from cultures grown *in vitro*. ELISA kits (TECRA, Ridascreen, VIDAS) are available to detect a limited range of enterotoxins (SEA, SEB, SEC, SED and SEE). However, SEG and SEH, and less commonly SEE and SEI, have been detected in the absence of SEA, SEB, SEC and SED and account for up to half of the incidents in England and Wales compatible with staphylococcal food poisoning. Recent studies in France also commonly found SEG, SEH, SEI and SEJ (Rosec, J.P. and Gigaud, O (2002) Staphylococcal enterotoxin genes of classical and new types detected by PCR in France. *Int. J. Food Microbiol.* 77, 61-70).

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

