

BECTON, DICKINSON AND COMPANY

**BBL™ CHROMagar™ Staph aureus
Verification Protocol
with Food Samples**

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1.0 INTRODUCTION

BBL™ CHROMagar™ Staph aureus is a selective medium for the isolation, enumeration and presumptive identification of *Staphylococcus aureus* from food samples. Selective agents are incorporated to inhibit gram-negative organisms, yeast and some gram-positive cocci. The chromogen mix in the medium consists of artificial substrates (chromogens), which release insoluble colored compounds when hydrolyzed by specific enzymes. This facilitates the detection and differentiation of *S. aureus* from other organisms. *S. aureus* utilizes one of the chromogenic substrates, producing mauve-colored colonies. The growth of mauve-colored colonies at 24 h is considered positive for *S. aureus* on BBL CHROMagar Staph aureus. Bacteria other than *S. aureus* may utilize other chromogenic substrates resulting in blue, blue-green, or if no chromogenic substrates are utilized, natural colored colonies. Confirmatory testing of mauve-colored colonies obtained from the food matrices mentioned below is required.

BBL CHROMagar Staph aureus has been validated by the AOAC™ Research Institute under the Performance Tested MethodsSM Program for the analysis of shell eggs, smoked salmon and cooked roast beef when using AOAC¹ and ISO² methods. The recovery and enumeration of *S. aureus* on BBL CHROMagar Staph aureus was compared to the AOAC and ISO reference plated medium, Baird-Parker Agar, using the recommended diluents at low, medium and high inoculum levels of *S. aureus*. After 24 h of incubation, enumeration was performed on BBL CHROMagar Staph aureus and after 48 h on Baird-Parker Agar.

Based on statistical analysis, no significant difference was found between the reference methods and the BBL CHROMagar Staph aureus method for any food type or contamination level, with the exception of a low-level smoked salmon sample. The low contamination level of smoked salmon demonstrated a statistical difference using the ISO method; i.e., the BBL CHROMagar Staph aureus method at 24 h recovered more colonies (Log_{10} 2.04) than the ISO reference at 48 h (Log_{10} 1.64). The repeatability precision estimates of the BBL CHROMagar Staph aureus method were satisfactory. The correlation coefficients ranged from 92.6% to 99.4%, demonstrating good correlation for all contamination levels in all food types tested.

No false positive colonies were recovered from the food matrices tested using BBL CHROMagar Staph aureus. All mauve colonies were confirmed as *S. aureus* with no discrepancies. Evaluation of known strains of *S. aureus* and non-*S. aureus* isolates were evaluated, producing both a sensitivity and specificity of 100% on BBL CHROMagar Staph aureus.

2.0 VERIFICATION STUDY OBJECTIVES

2.1 Primary Objective

Verification is the process of *evaluating a manufacturer's test method* under the conditions and against the food matrices present in an individual testing laboratory.

Thought leaders in the food industry recommend that laboratories *verify* any new test method under their own testing conditions, regardless of whether the method has been *validated* by an outside regulatory agency, such as AOAC-RI, AFNOR, etc.

The purpose of this study is to assess the performance of BBL™ CHROMagar™ Staph aureus in your laboratory as compared to other selective media using methods for the isolation and presumptive identification of *S. aureus* from food samples as recommended AOAC¹, ISO² or your current laboratory method.

Determine the sensitivity, specificity and agreement of BBL™ CHROMagar™ Staph aureus in comparison to Baird-Parker Agar when testing food samples following AOAC¹, ISO² or your current laboratory procedures.

2.2 Secondary Objective

Evaluate the performance of confirmatory methods on chromogenically colored colonies; e.g., biochemical and serological reactions.

3.0 STUDY DESIGN

3.1 Overview

This evaluation is an external verification study designed to assess performance of BBL™ CHROMagar™ Staph aureus for the isolation and identification of *S. aureus* from food samples.

Evaluation participants should become familiar with the appearance of *S. aureus* on BBL™ CHROMagar™ Staph aureus using known strains to observe appropriate color production. *S. aureus* appear as mauve- to orange/mauve-colored colonies on BBL CHROMagar Staph aureus. Most gram-positive organisms, if not inhibited, will produce blue, blue-green or natural color (colorless, white or cream) colonies. Gram-negative organisms and yeasts are partially to completely inhibited.

Occasionally, some strains of staphylococci, other than *S. aureus*, such as *S. cohnii*, *S. intermedius* and *S. schleiferi*, as well as corynebacteria and yeasts, may produce mauve-colored colonies at 24 h.³ Differentiation of *S. aureus* from non-*S. aureus* can be accomplished by coagulase, other biochemicals or Gram stain. Resistant gram-negative bacilli, which typically appear as small blue colonies, may also break through.

Incubation beyond 28 h (food) is not recommended due to an increase in potential false positives. Incubation less than the recommended 20 h may result in a lower percentage of correct results being obtained. Due to the natural golden pigment of some *S. aureus* strains, colony color may appear orange-mauve.

3.2 Methods

3.2.1 Testing will be performed using AOAC, ISO or your current laboratory methods for the detection of *S. aureus* from food. BBL™ CHROMagar™ Staph aureus and Baird-Parker Agar will be used with this method for isolation and enumeration of *S. aureus* in order to assess and compare their performance. See attached procedure (insert sites procedure number reference).

3.2.2 Approximately 25 samples should be evaluated in the study.

3.2.3 Confirmatory testing is to be performed per laboratory protocol for all colonies suggestive of *S. aureus*.

3.3 Data

3.3.1 Data collected in this evaluation will be analyzed to determine sensitivity, specificity and agreement between BBL™ CHROMagar™ Staph aureus and Baird-Parker Agar.

3.3.2 Agreement between chromogenically colored colonies and confirmatory tests, e.g., biochemicals, may also be determined.

4.0 MATERIALS

4.1 Provided by BD

4.1.1 BBL™ CHROMagar™ Staph aureus (CASA)

4.2 Provided by Investigator

4.2.1 Meat, poultry, egg product or other food samples.

4.2.2 All equipment, reagents, and supplies necessary to conduct routine microbiological testing per the laboratory's routine methods.

4.2.3 Media needed for testing.

4.2.4 Time and personnel necessary to perform the evaluation according to this protocol.

5.0 GENERAL METHODS

5.1 General/specific notes and precautions

5.1.1 Protect BBL™ CHROMagar™ Staph aureus plates from exposure to daylight, incandescent, or fluorescent light. Excessive exposure to light may result in reduced growth and/or reduced color production of some organisms.

5.1.2 Allow plates to come to room temperature and surfaces to dry prior to inoculating.

5.2 Sample Preparation

5.2.1 Food samples may be inoculated with organisms of interest since naturally contaminated samples may be infrequently available. For *S. aureus* detection, strains may be spiked into samples. With spiked samples, include one portion (approx. 5 samples) as unspiked, negative controls, one portion (approx. 10 samples) spiked with a low inoculum level (1-5 CFU/ sample size) and a third portion (approx. 10 samples) spiked with a high inoculum level (10-50 CFU/sample size). Control and inoculated test samples should be prepared at the same time.

5.2.2 Prepare food samples and dilutions per laboratory protocol.

5.2.2.1 AOAC Reference Method^{1,4}

5.2.2.1.1 Process five 50 g unthawed samples of each matrix at 3 inoculum levels (low, medium and high) and one unseeded level in 450 mL of Butterfield's buffered phosphate diluent (BB).

5.2.2.1.2 Homogenize samples at 16,000 – 18,000 rpm for two minutes.

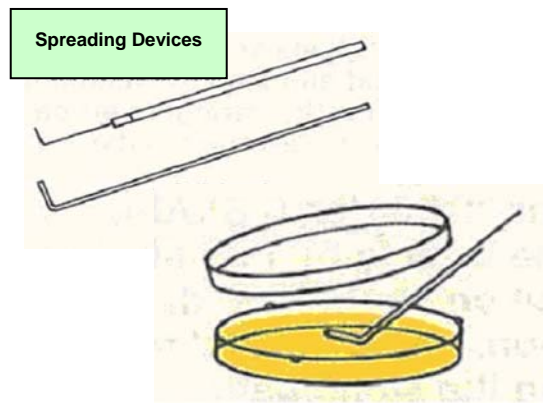
5.2.2.1.3 Using each 1:10 dilution prepared in 5.2.2.1.2, prepare serial dilutions ranging from 10^{-2} to 10^{-6} . This is done by transferring 10 mL of the 1:10 dilution to a 90 mL dilution blank (10^{-2}). Mix well and continue to dilute, using 10 mL aliquots to 90 mL diluent, to final dilution of 10^{-6} .

- 5.2.2.1.4 Using a 1 mL pipette, transfer 0.4 mL, 0.3 mL and 0.3 mL from each dilution to triplicate Baird-Parker (BP) plates. Repeat on triplicate BBL CHROMagar Staph aureus (CASA) plates.
- 5.2.2.1.5 Spread inoculum using a sterile spreader. Avoid edge of plate.
- 5.2.2.1.6 Incubate plates at 35-37°C in an upright position for one hour. Invert plates and continue to incubate the CASA plates for 20-24 h and the BP plates for 45-48 h.
- 5.2.2.1.7 Perform colony counts on CASA plates following 20-24 h of incubation. *S. aureus* will produce mauve to orange-mauve colored colonies.
- 5.2.2.1.8 Perform colony counts on BP plates following 45-48 h of incubation. Typical *S. aureus* colonies will produce black colonies surrounded by a clear zone.
- 5.2.2.1.9 Perform confirmation testing on all positive analyses from CASA and BP per AOAC Official Method 987.09.
- 5.2.2.1.10 Add number of colonies on triplicate plates represented by colonies confirmed as *S. aureus* and multiply by the sample dilution factor. Report this number as number of *S. aureus*/g of food tested.

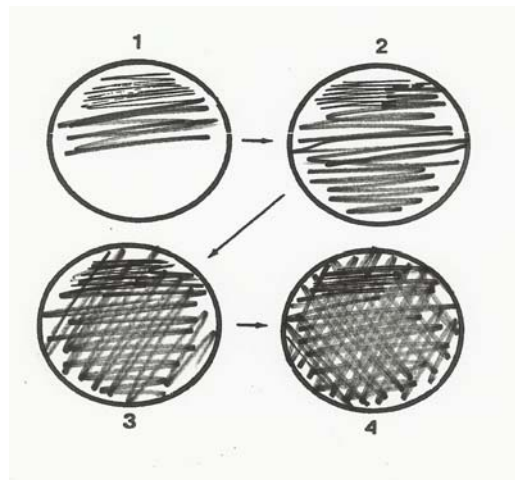
5.2.2.2 ISO Reference Method²

- 5.2.2.2.1 Process five samples of each matrix, at 3 inoculum levels (low, medium and high) and one unseeded level. Add Peptone Salt Solution (PSS) or Maximum Recovery Diluent (MRD) as diluent equal to 9 x mass (g).
- 5.2.2.2.2 Homogenize samples at 15,000 – 20,000 rpm for ≤ 2.5 minutes.
- 5.2.2.2.3 Prepare serial dilutions ranging from 10⁻² to 10⁻⁶ from each of the 10⁻¹ dilutions prepared in step 5.2.2.2.2 by transferring 1 mL of the 1:10 dilution to 9 mL of diluent. Mix well and continue to dilute to final dilution.
- 5.2.2.2.4 Transfer 0.1 mL to each plate, from each dilution, to duplicate BP and CASA plates.
- 5.2.2.2.5 Spread inoculum using a sterile spreader. Avoid edge of plate. Allow plates to dry for approximately 15 minutes at room temperature.
- 5.2.2.2.6 Incubate plates at 35-37°C for 24 ± 2 h.
- 5.2.2.2.7 Following incubation, perform colony counts on all plates with typical colonies. Typical colonies of *S. aureus* will produce mauve to orange-mauve colonies on CASA and black colonies surrounded by a clear zone on BP.
- 5.2.2.2.8 Reincubate BP plates at 35-37°C for 24 ± 2 h. and perform colony counts.
- 5.2.2.2.9 Perform confirmatory tests on positive analyses from CASA and BP per ISO 6888-1.
- 5.2.2.2.10 Calculate the number of *S. aureus* colonies per gram of sample per ISO 6888-1.

5.2.3 Inoculate test media with diluted samples per laboratory protocol by spread plate method.



5.2.4 Drop inoculum to center of plate. Use a sterile bent glass rod or other device to spread the inoculum from the center to edge of the plate (1). Rotate plate 180° and repeat, spreading from the center to the opposite edge of the plate (2). Rotate the plate 1/3 of a full turn and spread inoculum over entire plate (3). Again, rotate the plate another 1/3 of a full turn and spread inoculum over entire plate (4).



5.3 Record results

Follow package insert instructions for reading and interpreting BBL™ CHROMagar™ Staph aureus plates, including reading plates against a white background. Additional data, as follows, may be collected for the analysis of the results.

5.3.1 Record counts of *S. aureus*-suspect colonies after 20-24 hours of incubation.

5.3.2 Record Color Reaction

- (M) Mauve
- (OM) Orange-mauve
- (C) Colorless
- (BG) Blue-green
- (W) White
- (CR) Cream

5.4 Quality Control

- 5.4.1 QC results must be within specifications for any test result to be reported.
- 5.4.2 For BBL™ CHROMagar™ Staph aureus, follow the QC procedures recommended in the product package insert.
- 5.4.3 For all other media, perform QC procedures according to the laboratory's routine procedure and manufacturer's labeling.

References

1. AOAC Official Method 975.55. *Staphylococcus aureus* in foods. Official Methods of Analysis (2001), 17th ed. AOAC International, Arlington, VA.
2. International Organization for Standardization (ISO). 1999. ISO 6888-1: 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, 1st ed., 1999-02-15.
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CHROMagar is a trademark of Dr. A. Rambach.

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9.0 Key for Use When Recording Results in Sections 6.0 and 8.0**COLOR REACTIONS:****BBL™ CHROMagar™ Staph aureus**

(M)	Mauve
(OM)	Orange mauve
(C)	Colorless
(BG)	Blue-green
(W)	White
(CR)	Cream

Baird-Parker Agar

(BL)	Black
(G)	Gray
(w/OP)	With opaque zone
(w/CL)	With clear zone

BBL™ CHROMagar™ Staph aureus



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Patent 6,548,268

INTENDED USE

BBL™ CHROMagar™ Staph aureus is a selective medium for the isolation, enumeration and identification of *Staphylococcus aureus* from clinical and food sources. Confirmatory testing of typical isolates from clinical sources is not required.

BBL CHROMagar Staph aureus (prepared plated medium) has been validated by the AOAC™ Research Institute under the Performance Tested MethodsSM Program for the analysis of shell eggs, smoked salmon and cooked roast beef when using AOAC and ISO methods.^{1,2} Confirmatory testing of mauve-colored colonies obtained from the food matrices mentioned above is required.

SUMMARY AND EXPLANATION

S. aureus is a well documented pathogen. It is responsible for infections ranging from superficial to systemic.^{3,4} Due to the prevalence of this organism and its clinical implications, detection is of utmost importance.

Staphylococcal food poisoning caused by *S. aureus* is one of the most common types of foodborne illness worldwide. Its detection and enumeration help provide information about the potential health hazard of food, as well as being an indicator of poor hygiene.⁵ It is also recommended that this organism be used as an indicator of water quality.⁵

BBL CHROMagar Staph aureus is intended for the isolation, enumeration and identification of *S. aureus* based on the formation of mauve-colored colonies. The addition of chromogenic substrates to the medium facilitates the differentiation of *S. aureus* from other organisms.

An advantage **BBL CHROMagar Staph aureus** has over some traditional media, such as Baird-Parker Agar, is the ability to identify *S. aureus* in 24 h as opposed to 48 h.

PRINCIPLES OF THE PROCEDURE

BBL CHROMagar Staph aureus was originally developed by A. Rambach, CHROMagar, Paris, France. BD, under a licensing agreement, has optimized this formulation utilizing proprietary intellectual property used in the manufacturing of the **BBL CHROMagar Staph aureus** prepared plated medium.

Specially selected **Difco™** peptones supply nutrients. The addition of selective agents inhibits the growth of gram-negative organisms, yeast and some gram-positive cocci. The chromogen mix consists of artificial substrates (chromogens), which release an insoluble colored compound when hydrolyzed by specific enzymes. This facilitates the detection and differentiation of *S. aureus* from other organisms. *S. aureus* utilizes one of the chromogenic substrates, producing mauve-colored colonies. The growth of mauve-colored colonies at 24 h is considered positive for *S. aureus* on **BBL CHROMagar Staph aureus**. Bacteria other than *S. aureus* may utilize other chromogenic substrates resulting in blue, blue-green, or if no chromogenic substrates are utilized, natural colored colonies.

REAGENTS

BBL CHROMagar Staph aureus

Approximate Formula* Per Liter

Chromopeptone	40.0 g
NaCl	25.0 g
Chromogen Mix	0.5 g
Inhibitory agents	0.07 g
Agar	14.0 g

*Adjusted and/or supplemented as required to meet performance criteria.

Warnings and Precautions:

For *in vitro* Diagnostic Use.

If excessive moisture is observed, invert the bottom over an off-set lid and allow to air dry in order to prevent formation of a seal between the top and the bottom of the plate during incubation. Protect from light during drying. See Storage Instructions.

Pathogenic microorganisms, including hepatitis viruses and Human Immunodeficiency Virus, may be present in clinical specimens. "Standard Precautions"⁷⁻¹⁰ and institutional guidelines should be followed in handling all items contaminated with blood and other body fluids.

After use, prepared plates, specimen or sample containers and other contaminated materials should be sterilized by autoclaving before discarding.

Storage Instructions: On receipt, store plates in the dark at 2-8°C in original sleeve wrapping and original cardboard box until time of inoculation. Avoid freezing and overheating. Do not open until ready to use. Minimize the exposure of **BBL CHROMagar Staph aureus** to light before and during incubation, as light may destroy the chromogens. Prepared plates stored in their original sleeve wrapping at 2-8°C until just prior to use may be inoculated up to the expiration date and incubated for the recommended

incubation times. Allow the medium to warm to room temperature before inoculation.

Product Deterioration: Do not use plates if they show evidence of microbial contamination, discoloration, drying, cracking or other signs of deterioration.

PROCEDURE

Material Provided: **BBL CHROMagar Staph aureus**

Materials Required But Not Provided: Ancillary culture media, reagents, quality control organisms and other laboratory equipment as required.

SPECIMEN COLLECTION AND HANDLING

Refer to appropriate texts or standards for details in specimen/sample collection and handling procedures.

Test Procedure

Observe aseptic techniques. The agar surface should be smooth and moist, but without excessive moisture.

For clinical specimens, as soon as possible after receipt in the laboratory, inoculate onto a **BBL CHROMagar Staph aureus** plate and streak for isolation. If the specimen is cultured from a swab, roll the swab gently over a small area of the surface at the edge, then streak from this area with a loop. Incubate plates aerobically at 35 ± 2°C for 20-24 h in an inverted position (agar-side up).

For food samples, consult appropriate references and follow applicable standard methods. Inoculate the homogenized food samples onto **BBL CHROMagar Staph aureus** using the spread plate technique. Incubate plates aerobically at 35-37°C for 20-28 h in an inverted position (agar-side up).

User Quality Control:

Examine plates for signs of deterioration as described under "Product Deterioration." Check performance by inoculating a representative sample of plates with pure cultures of stable control organisms that produce known, desired reactions. The following test strains are recommended:

Test Strain	Expected Results
<i>Staphylococcus aureus</i> ATCC™ 25923	Growth; mauve colonies
<i>Staphylococcus saprophyticus</i> ATCC 15305	Growth; green to blue-green colonies
<i>Proteus mirabilis</i> ATCC 12453	Inhibition (partial to complete)

Quality control requirements must be performed in accordance with applicable local, state and/or federal regulations or accreditation requirements and your laboratory's standard Quality Control procedures. It is recommended that the clinical user refer to pertinent Clinical and Laboratory Standards Institute (formerly NCCLS) guidelines for appropriate Quality Control practices.

RESULTS

After proper incubation, read plates against a white background. *S. aureus* will produce mauve to orange/mauve colored colonies on the **BBL CHROMagar** medium. Most gram-positive organisms, if not inhibited, will produce blue, blue-green or natural color (colorless, white or cream) colonies. Gram-negative organisms and yeasts are partially to completely inhibited.

LIMITATIONS OF THE PROCEDURE

Occasionally some strains of staphylococci, other than *S. aureus*, such as: *S. cohnii*, *S. intermedius*, and *S. schleiferi*, as well as corynebacteria and yeasts, may produce mauve-colored colonies at 24 h.¹¹ Differentiation of *S. aureus* from non-*S. aureus* can be accomplished by coagulase, other biochemicals or Gram stain. Resistant gram-negative bacilli, which typically appear as small blue colonies, may also break through.

Incubation beyond 24 h (clinical) and 28 h (food) is not recommended due to an increase in potential false positives. If incubation time is exceeded, mauve-colored colonies should be confirmed prior to reporting as *S. aureus*.

Incubation less than the recommended 20 h may result in a lower percentage of correct results being obtained.

Due to the natural golden pigment of some *S. aureus* strains, colony color may appear orange-mauve.

*PRODUCER-SUPPLIED SAMPLES OF THIS TEST KIT MODEL WERE INDEPENDENTLY EVALUATED BY THE AOAC RESEARCH INSTITUTE AND WERE FOUND TO PERFORM TO THE PRODUCER'S SPECIFICATIONS AS STATED IN THE TEST KIT'S DESCRIPTIVE INSERT. THE PRODUCER CERTIFIES THIS KIT CONFORMS IN ALL RESPECTS TO THE SPECIFICATIONS ORIGINALLY EVALUATED BY THE AOAC RESEARCH INSTITUTE AS DETAILED IN *Performance Tested Methods*SM CERTIFICATE NUMBER 100503.

PERFORMANCE CHARACTERISTICS

Clinical Testing

In a field trial conducted at a large metropolitan hospital, 201 throat and sputum specimens from cystic fibrosis patients and 459 nasal specimens from other hospital patients were evaluated on **BBL CHROMagar** Staph aureus. **BBL CHROMagar** Staph aureus was compared to blood agar or Mannitol Salt Agar, with isolate confirmation by slide coagulase. *S. aureus* was recovered from 190 combined specimens. **BBL CHROMagar** Staph aureus detected 9 additional *S. aureus* positive cultures which were not recovered on conventional media. Four potential false positives were also observed on the **BBL CHROMagar** Staph aureus medium following 24 h incubation: two corynebacteria and two coagulase-negative staphylococci. **BBL CHROMagar** Staph aureus produced an overall sensitivity of 99.5% and a specificity of 99.2%.¹¹

Agrifood Testing

BBL CHROMagar Staph aureus was validated by the AOAC Research Institute under the Performance Tested Methods Program. The medium was evaluated by an external reference laboratory, as well as internally at BD, for the recovery and enumeration of *S. aureus* in cooked roast beef, smoked salmon and shell eggs. The recovery and enumeration of *S. aureus* on **BBL CHROMagar** Staph aureus was compared to the AOAC and ISO reference plated medium, Baird-Parker Agar, using the recommended diluents at low, medium and high inoculum levels of *S. aureus*. After 24 h incubation, enumeration was performed on **BBL CHROMagar** Staph aureus and after 48 h on Baird-Parker Agar.

Based on statistical analysis, no significant difference was found between the reference methods and the **BBL CHROMagar** Staph aureus method for any food type or contamination level, with the exception of a low-level smoked salmon sample. The low contamination level of smoked salmon demonstrated a statistical difference in internal testing using the ISO method; i.e., the **BBL CHROMagar** Staph aureus method at 24 h recovered more colonies (Log₁₀ 2.04) than the ISO reference at 48 h (Log₁₀ 1.64). The repeatability precision estimates of the **BBL CHROMagar** Staph aureus method were satisfactory. The correlation coefficients ranged from 92.6% to 99.4%, demonstrating good correlation for all contamination levels in all food types. Data is summarized in Tables 1 and 2.

No false-positive colonies were recovered from the food matrices using **BBL CHROMagar** Staph aureus. All mauve colonies were confirmed as *S. aureus* with no discrepancies.

Additionally, 30 strains of *S. aureus*, including known enterotoxin-producing strains, and 37 non-*S. aureus* isolates were evaluated producing both a sensitivity and specificity of 100% on **BBL CHROMagar** Staph aureus.¹¹

Table 1. Summary of AOAC and ISO External Testing of Cooked Roast Beef and Shell Eggs¹⁻³

		AOAC		
	Inoculum Level	Paired t-test or One-way ANOVA ^a	Repeatability (standard deviation) ^b	Square of linear correlation coefficient ^c
Cooked Roast Beef	Low	Not significant	0.398	96.0%
	Medium	Not significant	0.04	
	High	Not significant	0.062	
Shell Eggs	Low	Not significant	0.302	95.5%
	Medium	Not significant	0.089	
	High	Not significant	0.143	
		ISO		
	Inoculum Level	Paired t-test or One-way ANOVA ^a	Repeatability (standard deviation) ^b	Square of linear correlation coefficient ^c
Cooked Roast Beef	Low	Not significant	0.315	94.6%
	Medium	Not significant	0.045	
	High	Not significant	0.117	
Shell Eggs	Low	Not significant	0.341	92.6%
	Medium	Not significant	0.223	
	High	Not significant	0.135	

Table 2 Summary of AOAC and ISO External and Internal Testing of Smoked Salmon¹⁻³

		Paired t-test or One-way ANOVA ^a		Repeatability (standard deviation) ^b		Square of linear correlation coefficient ^c	
	Inoculum Level	External	Internal	External	Internal	External	Internal
AOAC Smoked Salmon	Low	Not significant	Not significant	0.132	0.271	99.4%	93.2%
	Medium	Not significant	Not significant	0.055	0.095		
	High	Not significant	Not significant	0.064	0.161		
ISO Smoked Salmon	Low	Not significant	Significant ^d	0.158	0.227	98.7%	97.4%
	Medium	Not significant	Not significant	0.135	0.165		
	High	Not significant	Not significant	0.116	0.033		


- a Paired t-test and one-way ANOVA analysis used to evaluate comparable performance of **BBL CHROMagar** Staph aureus versus the reference medium by comparing the mean of the log₁₀ of the colony counts.
- b Repeatability demonstrates **BBL CHROMagar** Staph aureus produces comparable results between the tests run on the same material and method.
- c Square of linear correlation coefficient is used to evaluate precision of quantitative methods over different *S. aureus* counts.
- d **BBL CHROMagar** Staph aureus recovered more colonies than the ISO reference method.

AVAILABILITY

Cat. No.	Description
214982	BBL™ CHROMagar™ Staph aureus, Pkg. of 20 plates

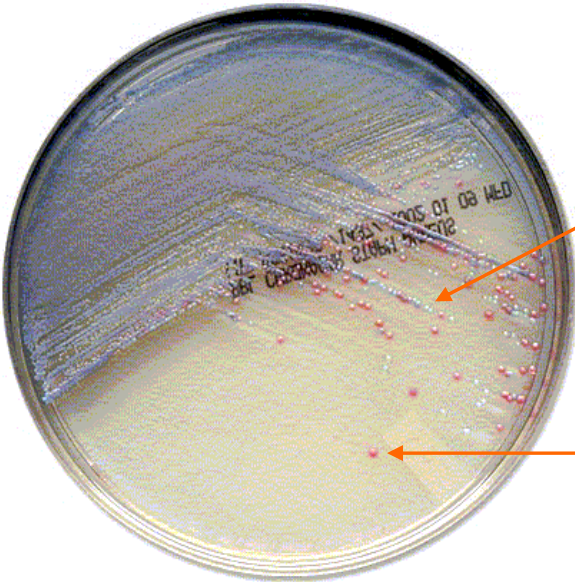
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1. AOAC Official Method 9755.55. *Staphylococcus aureus* in foods. Surface plating method for isolation and enumeration. 1976.
2. International Organization for Standards (ISO). Microbiology of food and animal feeding stuffs - Horizontal method for the enumeration of coagulase-positive Staphylococci (*Staphylococcus aureus* and other species) - Part 1: Technique using Baird Parker agar medium, 1st ed., ISO 6888-1:1999.
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10. Directive 2000/54/EC of the European Parliament and of the Council of 18 September 2000 on the protection of workers from risks related to exposure to biological agents at work (seventh individual directive within the meaning of Article 16(1) of Directive 89/391/EEC). Official Journal L262, 17/10/2000, p. 0021-0045.
11. Data on file, BD Diagnostic Systems.

 Becton, Dickinson and Company
 7 Loveton Circle
 Sparks, MD. 21152 USA
 (800) 638-8663

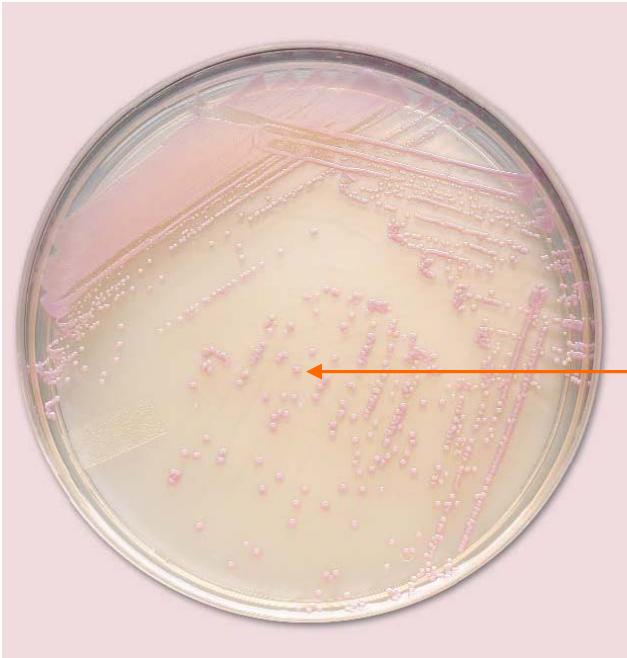
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BBL™ CHROMagar™ Staph aureus



S. saprophyticus
(green to blue-green)

S. aureus
(mauve/orange mauve)



S. aureus
(mauve/orange mauve)