

# Evaluation of Thermo Scientific Oxoid *Brilliance* MRSA 2 Agar

D. Crabtree, S. Withey. Thermo Fisher Scientific, Wade Road, Basingstoke, Hants, RG24 8PW, UK

## Overview

**Purpose:** To compare the performance of Thermo Scientific™ Oxoid™ *Brilliance*™ MRSA 2 (Thermo Fisher Scientific) to three agars for the detection of MRSA: chromID® MRSA Agar (bioMérieux), MRSASelect™ Agar (Bio-Rad) and BBL™ CHROMagar® MRSA Agar (BD).

**Methods:** One hundred MRSA and 126 non-MRSA isolates were each suspended in saline to 0.5 McFarland turbidity; suspensions were inoculated onto all MRSA agars. Plates were incubated at 37°C and read at 16, 18, 24 and 48 hr.

**Results:** *Brilliance* MRSA 2 Agar was shown to have high inclusivity and exclusivity: higher than or comparable to all other MRSA agars at all inoculum levels and read times (Tables 1, 2 and 3).

## Introduction

The frequency of methicillin-resistant *Staphylococcus aureus* (MRSA) infection remains high in community and healthcare environments<sup>1</sup>. Screening of healthcare patients reduces spread of infection, inappropriate use of antibiotics and emergence of resistant organisms<sup>2</sup>.

The performance of new *Brilliance* MRSA 2 Agar was compared to three agars for the detection of MRSA: chromID MRSA Agar, MRSASelect Agar and BBL CHROMagar MRSA Agar.

## Methods

One hundred MRSA and 126 non-MRSA isolates were each suspended in saline to 0.5 McFarland turbidity; suspensions were inoculated onto all MRSA agars.

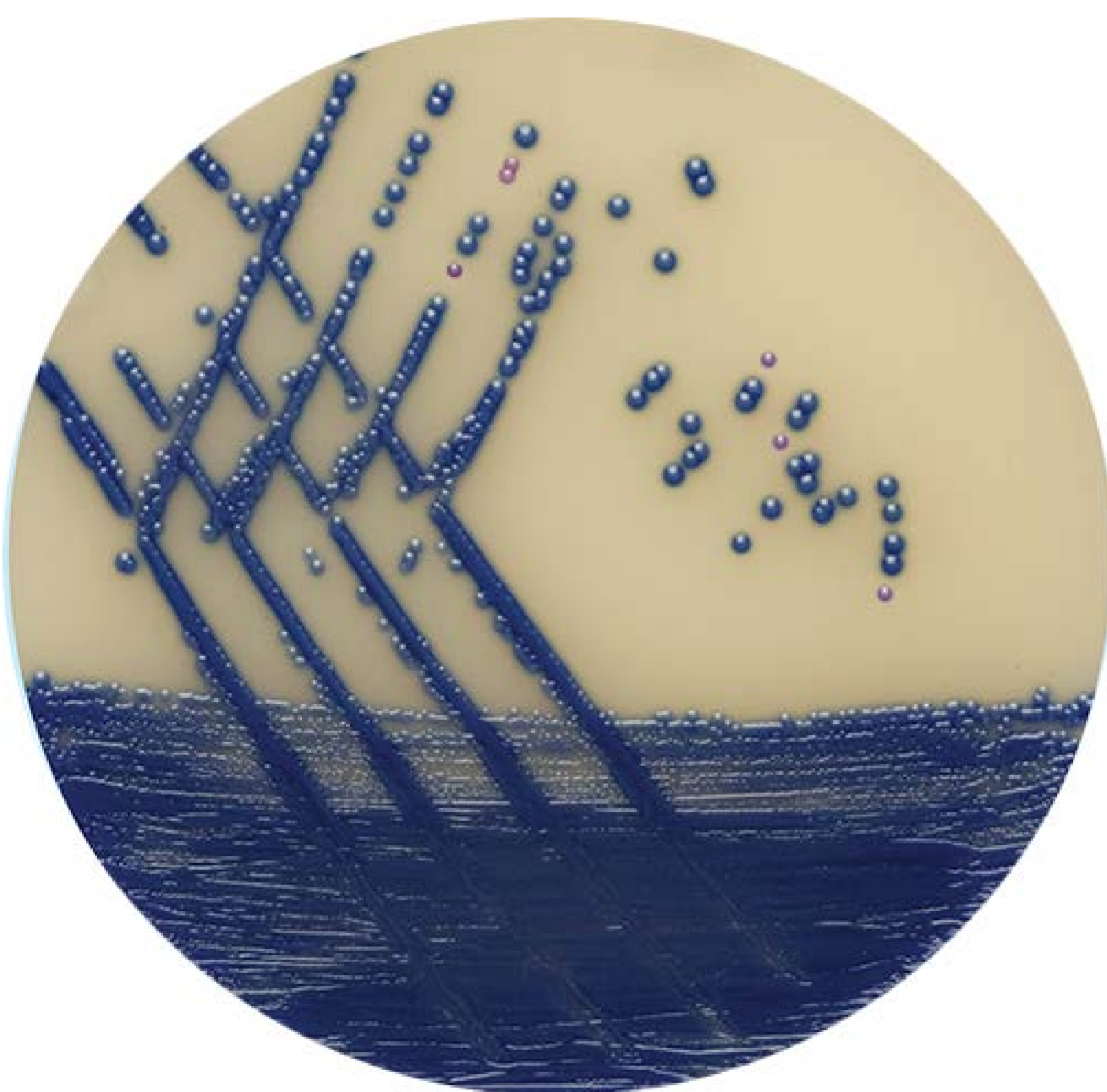
All MRSA isolates were inoculated at high ( $6.00 \times 10^7$ – $1.32 \times 10^9$  CFU/mL) and low\* ( $6.80 \times 10^3$ – $1.32 \times 10^5$  CFU/mL) inoculum levels using a 10µL loop. All non-MRSA isolates were inoculated at high ( $2.00 \times 10^6$ – $4.48 \times 10^8$  CFU/mL) inoculum levels.

Plates were incubated at 37°C and read at 16, 18, 24 and 48 hr.

\*compared with the microbial load expected on a typical clinical swab<sup>3</sup>

**FIGURE 1. *Brilliance* MRSA 2 Agar allows differentiation of MRSA from background flora:**

Blue = MRSA; all others = non-MRSA



## Results

*Brilliance* MRSA 2 Agar was shown to have high inclusivity and exclusivity: higher than or comparable to all other MRSA agars at all inoculum levels and read times (Tables 1, 2 and 3).

At 24 hr incubation, exclusivity of *Brilliance* MRSA 2 Agar was higher than chromID MRSA and MRSASelect (84.9% compared to 69.8% and 77.0% respectively). BBL CHROMagar MRSA, did not perform statistically significantly differently to *Brilliance* MRSA 2 Agar ( $P=1.000$ ).

*Brilliance* MRSA 2 Agar has clear readability: blue colonies indicating MRSA growth on a pale cream agar (Figure 1). MRSA agars from other suppliers showed a lack of contrast between presumptive MRSA colonies and agar color compared to that shown on *Brilliance* MRSA 2 Agar.

**TABLE 1. Inclusivity of four MRSA media at different incubation periods (n=100) at a high inoculum level ( $6.00 \times 10^7$ – $1.32 \times 10^9$  CFU/mL)**

Medium	Inclusivity (%)			
	16 hr	18 hr	24 hr	48 hr
<i>Brilliance</i> MRSA 2 Agar	95.0	96.0	96.0	97.0
chromID MRSA	93.0	94.0	95.0	95.0
MRSASelect	95.0	95.0	96.0	96.0
BBL CHROMagar MRSA	93.0	93.0	96.0	96.0

**TABLE 2. Inclusivity of four MRSA media at different incubation periods (n=100) at a low inoculum level ( $6.80 \times 10^3$ – $1.32 \times 10^5$  CFU/mL)**

Medium	Inclusivity (%)			
	16 hr	18 hr	24 hr	48 hr
<i>Brilliance</i> MRSA 2 Agar	79.0	85.0	93.0	93.0
chromID MRSA	60.0	85.0	90.0	91.0
MRSASelect	83.0	87.0	93.0	93.0
BBL CHROMagar MRSA	65.0	68.0	84.0	87.0

**TABLE 3. Exclusivity of four MRSA media at different incubation periods (n=126) at a high inoculum level ( $2.00 \times 10^6$ – $4.48 \times 10^8$  CFU/mL)**

Medium	Exclusivity (%)			
	16 hr	18 hr	24 hr	48 hr
<i>Brilliance</i> MRSA 2 Agar	86.5	85.7	84.9	81.8
chromID MRSA	84.9	83.3	69.8	69.1
MRSASelect	84.9	84.9	77.0	66.7
BBL CHROMagar MRSA	96.0	92.9	85.7	83.3

## Conclusion

With notably high inclusivity and better or equivalent exclusivity compared to other screening agars, new *Brilliance* MRSA 2 Agar is an easy-to-read medium that gives rapid and reliable results within 16-24 hr, making it an effective tool in any MRSA control program.

## References

- Köck, R., Becker, K., Cookson, B. *et al.* (2010) Methicillin-Resistant *Staphylococcus aureus* (MRSA): Burden of Disease and Control Challenges in Europe. *Eurosurveillance* 15 (41).
- Coia, J.E. *et al.* (2006) Guidelines for the control and prevention of methicillin-resistant *Staphylococcus aureus* (MRSA) in healthcare facilities. *Journal of Hospital Infection* 63(1), S1-S44.
- Mermel, I. *et al.* (2007). A quantitative analysis of clinical nasal swab samples testing positive of methicillin-resistant *Staphylococcus aureus*. European Society of Clinical Microbiology and Infectious Diseases. Munich, Germany. Abstract No. 1733 826.

© 2014 Thermo Fisher Scientific Inc. All rights reserved. chromID is a registered trademark of bioMérieux. MRSASelect is a trademark of Bio-Rad. BBL CHROMagar is a registered trademark of Dr. A. Rambach. All other trademarks are the property of Thermo Fisher Scientific Inc. and its subsidiaries.  
This information is not intended to encourage use of these products in any manners that might infringe the intellectual property rights of others.  
Folio number LT1378, 09/2014

**Thermo**  
SCIENTIFIC

A Thermo Fisher Scientific Brand