

Media Makes a Difference in the Detection of Surveillance Isolates of Methicillin Resistant *Staphylococcus aureus* using the Bruker MALDI-TOF Mass Spectrometry MRSA PSM-mec Detection Module

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Introduction

- Timely and cost effective identification of MRSA colonized patients is an important laboratory activity to assist infection control departments in helping prevent nosocomial spread.
- Chromogenic media is routinely used in Ontario for surveillance specimens, confirmed (by various other methods) for patients who are positive for first time.
- Preliminary results during routine validation of new chromogenic media for MRSA revealed different sensitivity when run on Bruker MALDI Biotyper System equipped with PSM-mec subtyping module.

Methods

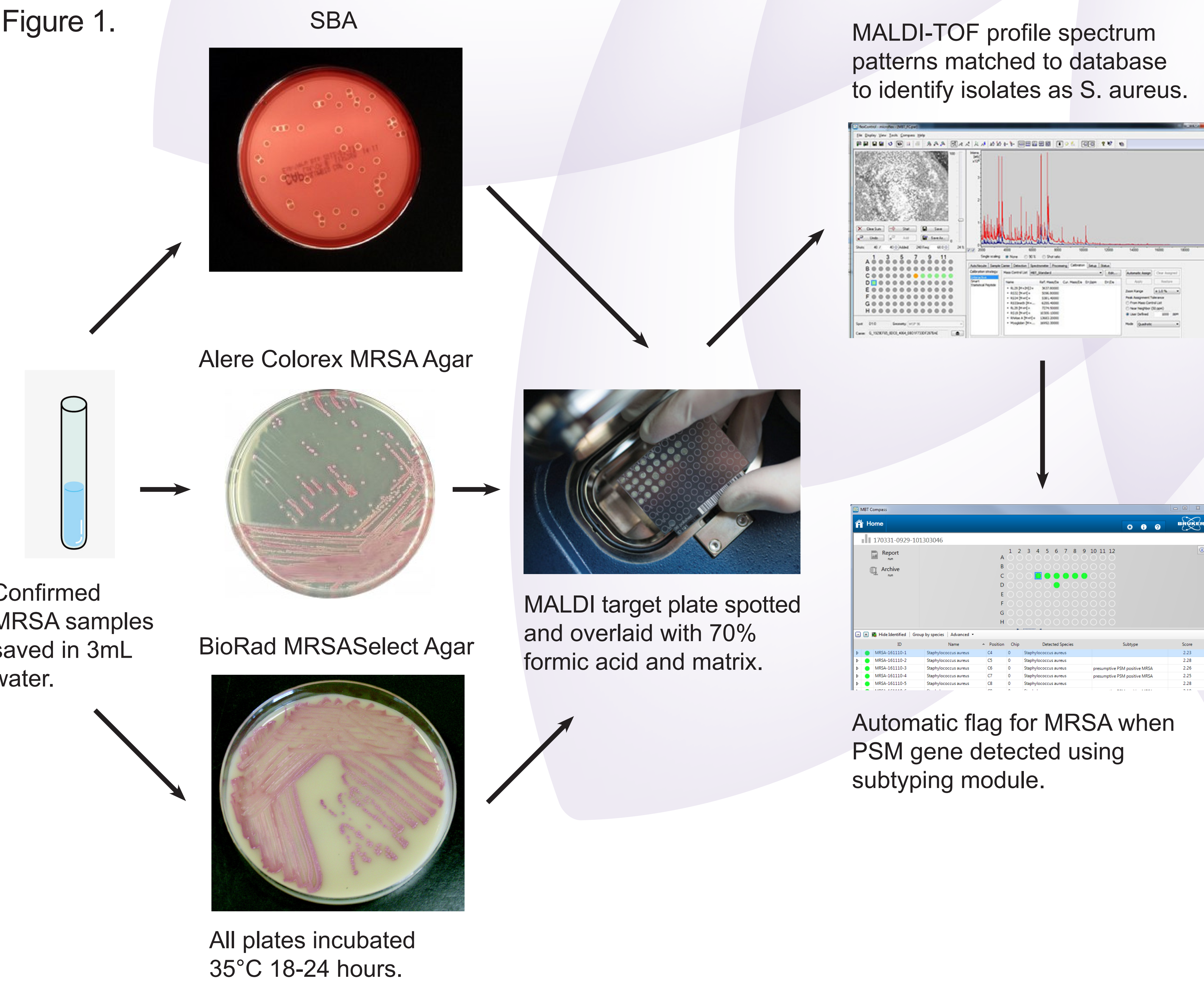
- Two hundred previously characterized MRSA isolates stored from previous six months (sources: perianal, nares, wounds, urines, sputum, blood cultures) used.
- Planted and streaked to Columbia 5% sheep blood agar (SBA) (non-chromogenic control), BioRad MRSA*select* agar, and Alere Colorex MRSA agar using standard technique.
- Typical colonies from each plate inoculated to target plate and slide extraction technique applied (figure 1).
- Spectra of *Staphylococcus aureus* isolates with Bruker score of ≥2.0 automatically screened for PSM peak signal (m/z 2413).

Results

- All 200 specimens grew as typical colonies on chromogenic media and identified correctly as *S. aureus*.

Table 1. Detection of PSM-mec for each media type from 200 isolates using the Bruker MBT System with PSM subtyping module.

Media Type	PSM-mec peak detected	PSM-mec peak undetected	Sensitivity
SBA	78	122	39%
BioRad MRSA <i>select</i>	0	200	0%
Alere Colorex MRSA	200	0	100%



Conclusions

- First study to demonstrate that culture media/conditions can influence direct resistance testing using MALDI-TOF MS.
- Sensitivity of MRSA detection from SBA consistent with prior publications (Rhoads et al., 37% MRSA positive blood culture isolates using standard media) ensuring reliability of software module.
- Limitation: isolates not confirmed genetically as MRSA.
- Combined with certain media (Alere Colorex MRSA Agar), PSM-mec subtyping module on Bruker MALDI MBT System can give reliable and timely identification of an isolate as MRSA.

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References

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