Multicentre Validation of a Chromogenic Medium for Screening of *Staphylococcus aureus* in Respiratory Samples from Cystic Fibrosis Patients

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Introduction

Staphylococcus aureus (S. aureus) causes purulent bacterial infections, many of which can lead to serious complications resulting in significant morbidity and healthcare costs. A quarter of the population carry *S. aureus* asymptomatically and its early detection is vital in preventing transmission and subsequent infection. In patients with cystic fibrosis, *S. aureus* is one of the most commonly isolated pathogens and is associated with advanced pulmonary disease.
The objective of this study was to validate the use of CHROMagar™ Staph aureus agar to screen for *S. aureus* in nasal surveillance specimens and respiratory specimens from cystic fibrosis patients. The study was carried in two hospitals: Hamilton (ON – Canada) and NECKER (Paris – France).

Materials and Methods

In this study a total of 200 clinical specimens were collected and seeded onto CHROMagar Staph aureus agar plates and incubated for 20 hours in an aerobic environment at 35 degrees C at which point analysis was performed. Maldi-ToF was performed on target and non-target colour colonies. Results were compared to the same samples set up on Mannitol Salt agar incubated at 35 degrees C for 20 hours.

Results

Of the 200 specimens tested, 81 were positive for *S. aureus* in both agars, an additional 9 specimens tested positive for *S. aureus* only on CHROMagar™ Staph aureus and 1 only on Mannitol Salt agar, for a total of 91 positive specimens. 18 specimens showed non-target colour growth, usually white or blue, on CHROMagar™ Staph aureus. These colonies were identified as *Staphylococcus haemolyticus, E.faecalis*. Two light pink colonies identified as *Staphylococcus schleiferi* and *Staphylococcus epidermidis*. CHROMagar™ Staph aureus agar showed a sensitivity of 99% (95%CI 0.94-1) and a specificity of 100% (95%CI 0.97-1) as compared to Mannitol Salt agar which showed a sensitivity of 89% (95%CI 0.81-0.94).

Figure 1: Hamilton Microbiology Laboratory

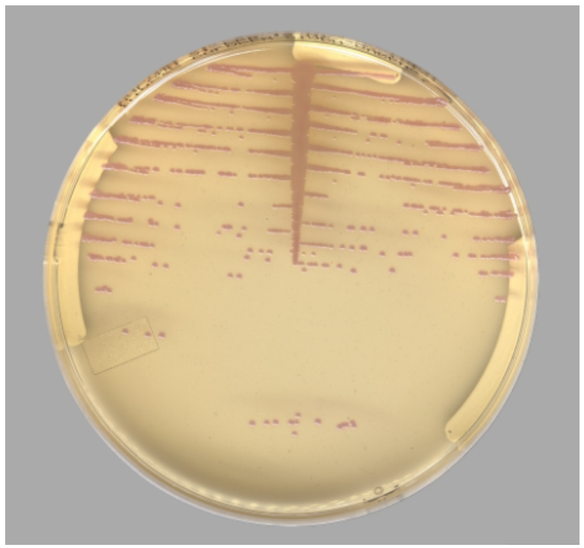

Figure 2: CHROMagar™ Staph aureus

Conclusion

Results showed CHROMagar™ Staph aureus had a significantly greater sensitivity than Mannitol Salt in isolating *S. aureus* from nasal surveillance specimens and respiratory specimens from cystic fibrosis patients. *S. aureus* colonies were easily differentiated as mauve colour and most breakthrough growth was inhibited.