Validation and implementation of Colorex™ CHROMagar™ Staph aureus on WASP™/WASPLab™ for screening for Staphylococcus aureus using the ESwab™

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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 asymptptomatically 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.

Objective:

The objective of this study was to validate the use of Colorex™ Staph aureus (CHROMagar™) to screen for S. aureus in nasal surveillance specimens and respiratory specimens from cystic fibrosis patients. Plates were seeded on the WASP™ using a 30 ul loop and incubated and analyzed on the WASPLab™ with digital imaging analysis.

Material/methods

In this study 130 clinical specimens were collected with ESwab™ kits and processed on a WASP™ using Colorex™ Staph aureus (CHROMagar™) agar plates and a Staph aureus screening protocol with a 30 ul loop and a single type 5 streaking pattern. Plates were incubated in the WASPLab™ for 20 hours at which point imaging analysis was performed. Vitek MS (Maldi-ToF) was performed on target and non-target colour colonies isolated. Results were compared to the same samples set up on Mannitol Salt agar incubated at 35 degrees C for 20 hours.

Results

Of the 130 specimens tested, 40 were positive for S. aureus using Mannitol Salt agar. An additional 8 specimens tested positive for S. aureus using the Colorex™ Staph aureus (CHROMagar™) plates for a total of 48 positive specimens. 9 specimens showed non-target colour growth, usually white, on Colorex™ Staph aureus (CHROMagar™) agar. These colonies were identified by Vitek MS as Staphylococcus haemolyticus. One light pink colony identified as Staphylococcus schleiferi. Colorex™ Staph aureus (CHROMagar™) showed a sensitivity of 100% (95%CI 0.91-1) and a specificity of 100% (95%CI 0.95-1) as compared to Mannitol Salt agar which showed a sensitivity of 83% (95%CI 0.70-0.91).

Conclusion

Results showed Colorex™ Staph aureus (CHROMagar™) had a significantly greater sensitivity than Mannitol Salt in isolating S. aureus from nasal surveillance specimens. The use of the WASP for set up provides efficient and consistent processing and WASPLab™ imaging allows for high resolution digital imaging analysis.