An Improved Medium For The Enumeration Of Coagulase-Positive Staphylococci From Linen and Environmental Samples: *Brilliance* Staph 24 Agar

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Overview

Purpose: This study evaluated the use of Thermo Scientific™ Oxoid™ *Brilliance*™ Staph 24 Agar (Thermo Fisher Scientific) as an alternative to Baird- Parker Agar supplemented with Egg Yolk and Tellurite for the enumeration of coagulase-positive staphylococci from linen rinses/elutes and environmental samples which are used as indicators for the presence of MRSA.

Methods: Routine samples were plated onto Brilliance Staph 24 Agar and either Baird-Parker Agar supplemented with Egg Yolk and Tellurite. Post-incubation, results from the two media were compared.

Results: *Brilliance* Staph 24 Agar is a reliable alternative to Baird-Parker Agar for the enumeration of coagulase-positive staphylococci from environmental samples, hand swabs and textile/linen samples and has the advantage of providing results 24 hours sooner than Baird-Parker Agar supplemented with Egg Yolk and Tellurite (according to ISO 6888-1:1999).

Introduction

The decontamination of used hospital linen which may be contaminated with infectious agents and the supply of clean linen are essential for the protection of both medical staff and patients[1].

UK NHS guidelines outlined in the Department of Health Guideline HSG(95)18, require monitoring of hygiene standards and effective washing processes; including hand swabbing of laundry employees and bioburden testing of aqueous extracts from washed linen to ensure that linen is thoroughly cleaned. Although screening for a range of pathogenic and indicator organisms is performed, this study was designed to evaluate the use of *Brilliance* Staph 24 Agar as an alternative to Baird- Parker Agar supplemented with Egg Yolk and Tellurite for the enumeration of coagulase-positive staphylococci from linen rinses/elutes and environmental samples which are used as indicators for the presence of MRSA.

Methods

Three hundred and fifteen routine samples comprising hand swabs, environmental samples, pre- and post- laundered textiles (including hospital linen), washing machine drain water and large volume air samples using impingement onto test agar analysed. Samples were either directly filtered or eluted (solid matrices) through a 0.45 µm membrane with Maximum Recovery Diluent. Processed membranes were aseptically transferred to the surface of either Baird-Parker Agar supplemented with Egg Yolk and Tellurite (Thermo Fisher Scientific) or *Brilliance* Staph 24 Agar. Both media were incubated at 37±1°C. Plates of Baird-Parker Agar were incubated for 48±2 hr whereas plates of *Brilliance* Staph 24 Agar were incubated for 24±2 hr. Presumptive positive growth from *Brilliance* Staph 24 Agar and both presumptive typical and atypical colonies from Baird-Parker Agar were confirmed by latex agglutination.

Results

Of the three hundred and fifteen samples analysed, one hundred samples gave presumptive typical colonies on Baird-Parker Agar, compared to forty six presumptive positive samples on *Brilliance* Staph 24 Agar. Confirmation of presumptive colonies from both media demonstrated that forty two (42%) of the one hundred Baird-Parker samples contained coagulase-positive staphylococci compared to 100% of the presumptive positive samples identified on *Brilliance* Staph 24 Agar.

FIGURE 1. Coagulase-positive *S. aureus* on *Brilliance* Staph 24 Agar

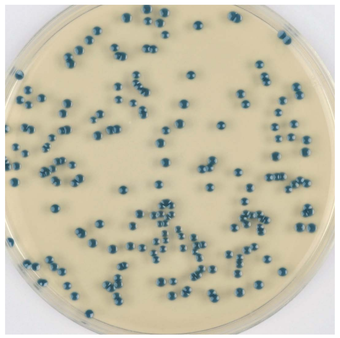

TABLE 1. Analysis of routine samples

n=315	Presumptive positives	False positives	Confirmed positives	Negatives
Baird-Park Agar	100	56	44	215
Brilliance Staph 24 Agar	46	0	46	269

Conclusion

Similar numbers of positive samples were confirmed by both of the media during the evaluation. Forty four and forty six samples of confirmed coagulase-positive isolates were identified using Baird Parker Agar and *Brilliance* Staph 24 Agar respectively. The variation in identifying several of the positive samples between the two media was, in the opinion of the trial site, due to the unpredictable nature of trying to detect low numbers of organisms which are present in a non-homogenous distribution within the individual liquid samples that were being evaluated in this study.

The evaluation demonstrated that *Brilliance* Staph 24 Agar is a reliable alternative to Baird-Parker Agar for the enumeration of coagulase-positive staphylococci from environmental samples, hand swabs and textile/linen samples and has the advantage of providing results 24 hours sooner than Baird-Parker Agar supplemented with Egg Yolk and Tellurite (according to ISO 6888-1:1999). Presumptive positive colonies were easily identified on *Brilliance* Staph 24 Agar due to the distinctive blue colonies. Compared to Baird-Parker Agar, significantly fewer false positive results were identified from *Brilliance* Staph 24 Agar. This reduction in the number of confirmation tests can result in reduced laboratory workload and overall costs of testing.

As a result, *Brilliance* Staph 24 Agar was well received by the trial site as an alternative medium for the routine identification of coagulase positive staphylococci from membrane filtered samples, where monitoring of hygiene levels and checks on successful laundering are required for hospital linen, to ensure compliance with the UK Department of Health Guideline HSG(95)18.

References

1. HSG(95)18, UK Department of Health.

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