

An Improved Medium For The Enumeration of Coagulase-Positive Staphylococci From Foods: *Brilliance* Staph 24 Agar

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Overview

Purpose: Thermo Scientific™ Oxoid™ *Brilliance™* Staph 24 Agar was evaluated as a new chromogenic medium for the enumeration of coagulase-positive staphylococci within 24 hours from food samples.

Methods: Food samples comprising cooked vegetables, sweets and chocolate, powdered flavourings, meat sauce and cheese were tested on *Brilliance* Staph 24 Agar and both Baird-Parker Agar supplemented with Egg Yolk and Tellurite.

Results: The study demonstrated that *Brilliance* Staph 24 Agar is a reliable alternative to Baird-Parker Agar for the enumeration of coagulase-positive staphylococci from foods within 24 hours.

Introduction

Contamination of foods both pre- and post production with coagulase positive staphylococci is a potential cause of serious food poisoning. Although Baird-Parker Agar supplemented with Egg Yolk and Tellurite is traditionally the most commonly used medium for the enumeration of coagulase-positive staphylococci according to ISO 6888-1:1999, the 48 hour incubation period and highly variable colony morphology of typical and atypical isolates are widely seen as disadvantages. In this study, *Brilliance* Staph 24 Agar was evaluated as a new chromogenic medium for the enumeration of coagulase-positive staphylococci within 24 hours from food samples.

Methods

Eighty routine unspiked food samples comprising cooked vegetables, sweets and chocolate, powdered flavourings, meat sauce and cheese were analysed.

Samples were diluted to 10⁻¹ in Maximum Recovery Diluent and 0.25 ml of prepared samples were plated onto both Baird-Parker Agar supplemented with Egg Yolk and Tellurite (Acumedia) and *Brilliance* Staph 24 Agar. Plates of Baird-Parker Agar were incubated at 37°C for 48 ±2 hrs and *Brilliance* Staph 24 Agar at 37°C for 24 ±2 hrs.

Additionally, due to the absence of natural contamination in the routine foods samples with staphylococci, five samples from each of the food categories were spiked with a strain of coagulase-positive *S. aureus* prior to serial dilution. Three presumptive positive atypical colonies (from Baird-Parker Agar) and typical colonies (from both media) were subcultured onto Plate Count Agar according to the laboratory's in-house confirmation method. Inoculated plates of Plate Count Agar were incubated at 37°C for 24-48 hours to obtain single colonies which were confirmed by conventional tube coagulase testing (Remel Coagulase Plasma) according to ISO 6888-1:1999.

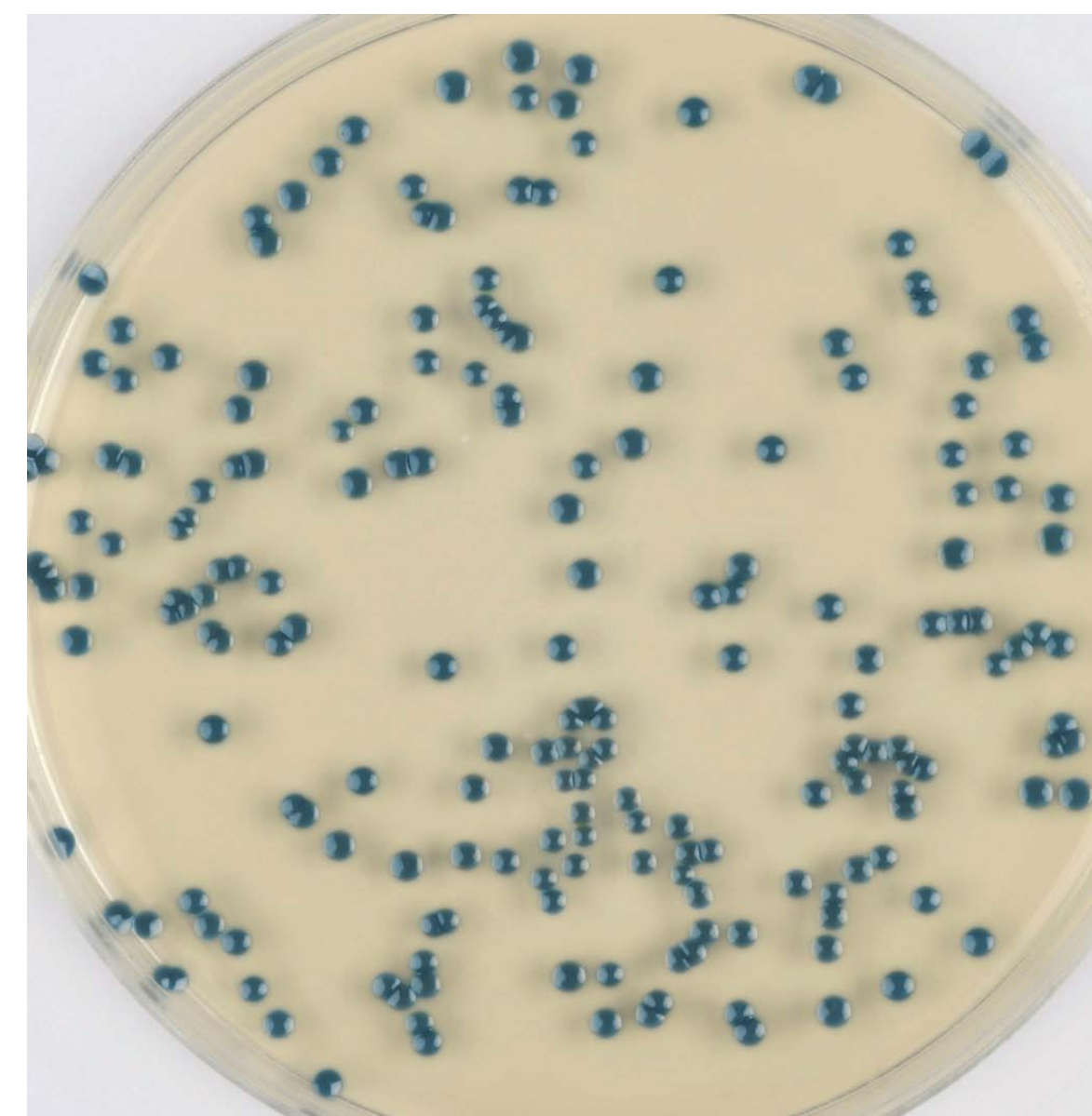
TABLE 1: Analysis of routine food samples

n=80	Presumptive positive	Confirmed positive	Negative
Baird-Parker Agar	6	0	74
<i>Brilliance</i> Staph 24 Agar	1	0	79

TABLE 2: Analysis of spiked routine food samples

n=25	Presumptive positive	Confirmed positive
Baird-Parker Agar	25	25
<i>Brilliance</i> Staph 24 Agar	25	25

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



Results

Seventy four of the eighty samples were shown to be negative for coagulase-positive staphylococci with Baird-Parker Agar (Table 1). The six remaining samples (all cheese) were initially identified as presumptive positives although confirmation by tube coagulase testing showed them to be negative. A single colony of presumptive positive growth was identified from a routine cheese sample by *Brilliance* Staph 24 Agar. Confirmation (tube coagulase) showed this isolate was a false positive and that coagulase-positive staphylococci were absent. Further identification of the isolate from *Brilliance* Staph 24 Agar showed that it was a Gram-negative rod (most likely *Pseudomonas* spp.).

Brilliance Staph 24 Agar additionally, demonstrated equivalent performance to Baird-Parker Agar at detecting coagulase-positive *S. aureus* from spiked samples.

Conclusion

The study demonstrated that *Brilliance* Staph 24 Agar is a reliable alternative to Baird-Parker Agar for the enumeration of coagulase-positive staphylococci from foods within 24 hours. Significantly fewer false presumptive positive results, requiring confirmation, were identified on *Brilliance* Staph 24 Agar, resulting in fewer confirmation tests and a reduced laboratory work load.