

Thermo Scientific *Brilliance* GBS Agar For Group B Streptococci Screening

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Overview

Purpose: To compare the performance of the new Thermo Scientific™ *Brilliance*™ GBS Agar (Thermo Fisher Scientific) to Granada Agar (bioMérieux) for the detection of *Streptococcus agalactiae* (group B streptococci; GBS) from genital swabs.

Methods: 920 genital swabs were inoculated onto *Brilliance* GBS Agar and Granada Agar and incubated according to manufacturers' instructions. Presumptive GBS colonies were confirmed using the laboratory's routine methods.

Results: Sensitivity and specificity of *Brilliance* GBS Agar was comparable to Granada Agar. However, *Brilliance* GBS Agar inhibited a far greater number of non-target organisms than Granada Agar, making identification and confirmation of GBS colonies from *Brilliance* GBS Agar far easier than from Granada Agar.

Introduction

Streptococcus agalactiae is recognised as the most frequent cause of severe early onset (less than seven days of age) infection in newborn infants with an incidence in the UK of 0.5/1000 births¹. Although routine screening for antenatal GBS carriage is recommended in the US by the Centers for Disease Control and Prevention (CDC)² there are no such recommendations from the UK's Royal College of Obstetricians and Gynaecologists. Nevertheless, many laboratories do screen pregnant women on arrival in the labour ward.

Brilliance GBS Agar is a transparent screening medium for the culture of beta-haemolytic and non-haemolytic *S. agalactiae* (group B streptococci (GBS)). GBS will grow as pink-coloured colonies on the medium (see figure 1). *Brilliance* GBS Agar contains a combination of antibacterial compounds to inhibit the growth of a wide variety of organisms commonly associated with human carriage. Any non-target organisms (i.e. non-GBS) that are not inhibited, grow as either blue or purple colonies (see figure 2).

FIGURE 1. Growth of GBS on *Brilliance* GBS Agar



FIGURE 2. *Brilliance* GBS Agar showing GBS (pink) and non-target (blue) colonies



Methods

Sample Inoculation

Nine hundred and twenty genital swabs (taken from women and men during routine screening at Wexham Park Hospital) were streaked onto *Brilliance* GBS Agar and Granada Agar using the Kiestra InoQuA®-TLA-FA automatic inoculation system. Both media were incubated at 35-37°C for 18-24 hr.; *Brilliance* GBS Agar was incubated aerobically and Granada Agar incubated anaerobically.

Interpretation & confirmation

Orange colonies on Granada Agar were deemed diagnostic of GBS. Orange colonies on Granada Agar and pink colonies on *Brilliance* GBS Agar were confirmed via the direct testing method using Thermo Scientific PathoDextra™ Strep Group B latex (Thermo Fisher Scientific). AST (penicillin, erythromycin, vancomycin, clindamycin and linezolid) of presumptive GBS from both media was performed on Vitek® 2 microbial identification system (bioMérieux). Further identification of all colonies seen on *Brilliance* GBS Agar and colonies other than orange-coloured on Granada Agar was performed on Vitek MS (bioMérieux).

Data Analysis

Sensitivity, specificity and percentage inhibition of non-target organisms (i.e. the percentage of organisms other than GBS inhibited from growing) were calculated for both media.

Results

Sensitivity and specificity of *Brilliance* GBS Agar was comparable to Granada Agar (see table 1).

TABLE 1. Sensitivity and specificity of the two GBS screening media

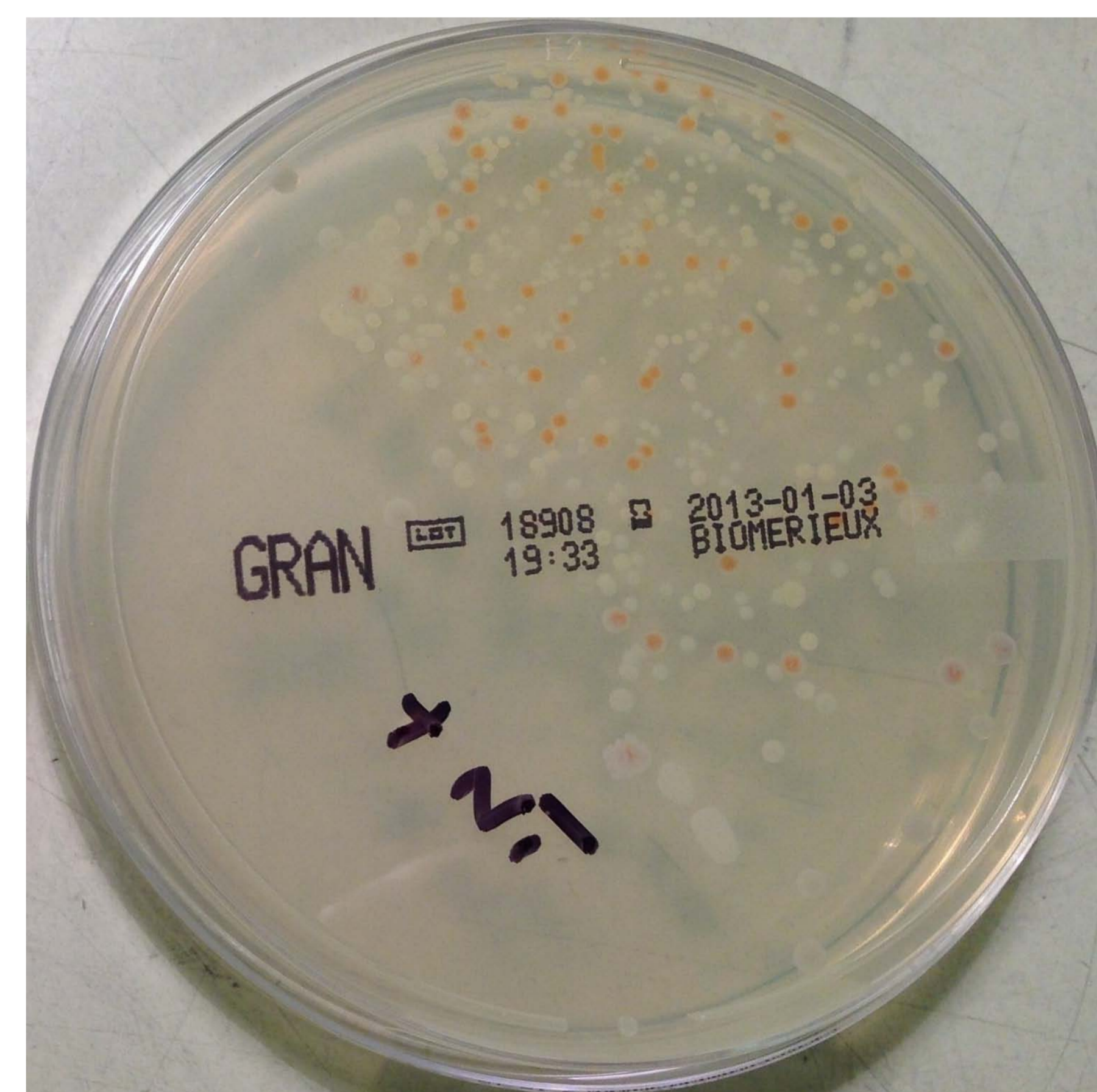
Performance	<i>Brilliance</i> GBS Agar	Granada Agar
Sensitivity	94.4% (95% CI=92.9-95.9)	93.7% (95% CI=92.1-95.3)
Specificity	99.4% (95% CI=98.9-99.9)	100% (95% CI=100)

The number of non-target organisms inhibited by *Brilliance* GBS Agar was far greater than Granada Agar; *Brilliance* GBS Agar inhibited 96% of all non-target organisms compared to only 83% inhibited by Granada Agar (see table 2). Of the nine hundred and twenty samples tested, one hundred and sixty samples plated onto Granada Agar showed white colonial growth of non-target organisms (predominantly *Enterococcus faecalis* but also species such as staphylococci, streptococci (including non-haemolytic GBS) and yeasts (see figure 3). Growth of non-target organisms on Granada Agar made isolation of GBS far more difficult than when using *Brilliance* GBS Agar; GBS colonies from Granada Agar often needed to be subcultured for a further 24 hr. to obtain isolated colonies for confirmatory testing.

TABLE 2. Percentage inhibition of the two GBS screening media

Performance	<i>Brilliance</i> GBS Agar	Granada Agar
% inhibition	96%	83%

FIGURE 3. Granada Agar showing significant growth of non-target organisms as well as GBS



Conclusion

Brilliance GBS Agar proved to be a highly selective media for the isolation of GBS from clinical samples and unlike Granada Agar showed noteworthy inhibition of non-target organisms, especially Enterococci and the ability to detect beta- and non-haemolytic GBS within 24 hr.

References

- Prevention of early onset neonatal group B streptococcal disease. (May 2003). Royal College of Obstetricians and Gynaecologists. Guideline no 36.
- Verani, J. R., McGee, L. Schrag, S. J. Division of Bacterial Diseases, National Center for Immunization and Respiratory Diseases (2010). Prevention of Perinatal Group B Streptococcal Disease. Revised Guidelines from CDC

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Folio number LT2079A, 04/13.