

A Comparative Evaluation Of Group B Strep Screening Media

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Overview

Purpose: Thermo Scientific™ *Brilliance*™ GBS Agar (Thermo Fisher Scientific) was compared to Primary Group B Strep Medium and Colorex™ StrepB Agar (E&O Laboratories Ltd.) for detection of *Streptococcus agalactiae* (group B Streptococci; GBS) from high vaginal swabs (HVS).

Methods: 250 HVS were inoculated onto the three media and incubated aerobically at 35-37°C for 20-24 hr. Coloured GBS colonies (according to manufacturers' instructions) on the three media were confirmed using Thermo Scientific™ PathoDextra™ Strep Group B Latex (Thermo Fisher Scientific) and Vitek® 2 (bioMérieux).

Results: *Brilliance* GBS Agar detected more GBS than Primary Group B Strep Medium and Colorex StrepB Agar, showing a higher sensitivity than the other two media. *Brilliance* GBS Agar also showed noteworthy inhibition of non-target organisms and the ability to detect non-beta-haemolytic GBS within 24 hr.

Introduction

Streptococcus agalactiae is a leading cause of neonatal sepsis, meningitis, and pneumonia, affecting 0.5 to 2 newborns/1,000 live births in Europe, although the true burden of GBS disease in newborns could be significantly higher than that reported in some European studies¹. There is no UK national screening programme for GBS in pregnancy, hence UK colonisation rates are unknown². Despite this, many laboratories do screen pregnant women on arrival in the labour ward.

Brilliance GBS Agar (figures 1 and 2) is a transparent screening media for the culture of GBS. GBS will grow as pink-coloured colonies on the medium. *Brilliance* GBS Agar contains a combination of antibacterial compounds including the proprietary Inhibigen™ technology, designed to inhibit the growth of a wide variety of organisms commonly associated with human carriage.

Method

Two hundred and fifty HVS taken from pregnant and non-pregnant women were streaked onto *Brilliance* GBS Agar, Primary Group B Strep Medium and Colorex StrepB Agar. All media were incubated aerobically at 35-37°C for 20-24 hr. Pink colonies on *Brilliance* GBS Agar, orange colonies on Primary Group B Strep Medium and mauve/red/pink colonies on Colorex StrepB Agar were confirmed using PathoDextra Strep Group B latex. Any other coloured colonies (as well as all presumptive GBS colonies) seen on any of the plates were identified using Vitek 2 (bioMérieux).

Sensitivity and specificity of the three group B screening media were calculated and any statistical significant difference between the three media was determined using McNemar's Chi squared test. The negative predictive value (NPV), positive predictive value (PPV) and percentage inhibition of non-target organisms was also calculated.

FIGURE 1. *Brilliance* GBS Agar showing GBS (pink) and non-target (blue) colonies



FIGURE 2. Pink GBS on *Brilliance* GBS Agar

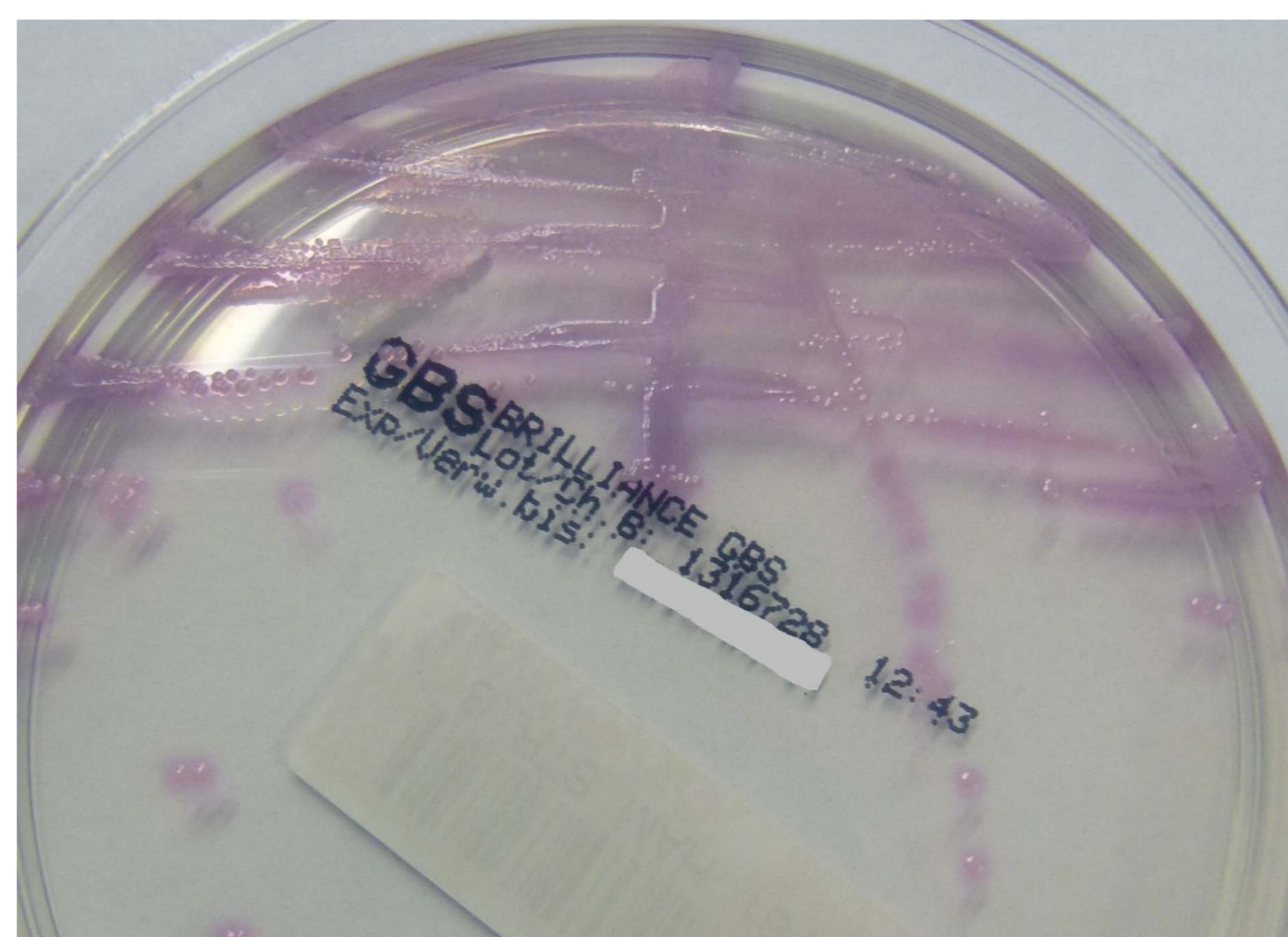


TABLE 1. Performance of three group B strep screening media

Performance	<i>Brilliance</i> GBS Agar	Primary Group B Strep Medium	Colorex StrepB Agar
Sensitivity	94.6% (95% CI = 91.8-97.4)	73.0% (95% CI = 67.5-78.5)	89.2% (95% CI = 85.3-93.0)
Specificity	96.2% (95% CI = 93.9-98.6)	98.6% (95% CI = 97.1-100)	94.9% (95% CI = 92.1-97.6)
PPV	81.4% (95% CI = 76.6-86.2)	90.0% (95% CI = 86.3-93.7)	76.7% (95% CI = 71.5-82.0)
NPV	99.0% (95% CI = 97.8-100)	95.5% (95% CI = 92.9-0.98)	97.9% (95% CI = 96.1-99.7)

TABLE 2. Percentage inhibition of non-GBS observed on group B strep screening media

<i>Brilliance</i> GBS Agar	Primary Group B Strep Medium	Colorex StrepB Agar
90.6%	67.1%	70.0%

Results

Brilliance GBS Agar detected more GBS than either Colorex StrepB Agar and Primary Group B Strep Medium. Performance of all three group B Streptococci screening media is summarised in table 1.

Sensitivity of *Brilliance* GBS Agar was higher than Colorex StrepB Agar and Primary Group B Strep Medium (94.6%, 73.0% and 89.2% respectively) the difference being statistically significant ($p=0.027$) for Primary Group B Strep Medium. The NPV of *Brilliance* GBS Agar was also higher than Primary Group B Strep Medium and Colorex StrepB Agar (99.0%, 95.5% and 97.9% respectively).

Brilliance GBS Agar was also able to inhibit growth of non-target organisms far better than the other two agars. Of the samples that yielded no GBS, *Brilliance* GBS Agar inhibited growth of 90.6% species other than GBS, compared to 67.1% for Primary Group B Strep Medium and 70.0% for Colorex StrepB Agar (see table 2).

A number of different species other than GBS grew on both Colorex StrepB Agar and Primary Group B Strep Medium, the majority of these being Enterococcus species but also including Lactobacilli, Streptococci groups A, C and G and coagulase negative staphylococci. Colony colours of these species on Colorex StrepB Agar and Primary Group B Strep Medium ranged from blue/turquoise/mauve, white/grey to pink (the latter being classed as a false positive result on Colorex StrepB Agar).

Conclusion

Brilliance GBS Agar proved to be a highly selective medium for the isolation of GBS and unlike Primary Group B Strep Medium and Colorex StrepB Agar, showed noteworthy inhibition of non-target organisms and the ability to detect non-beta-haemolytic GBS within 24 hr.

References

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