

# An Evaluation Of Brilliance GBS Agar For The Detection Of GBS From Vaginal Swabs

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## Overview

**Purpose:** To evaluate the performance of Thermo Scientific™ *Brilliance*™ GBS Agar for the detection of group B streptococci (GBS) from vaginal swabs.

**Methods:** Five hundred and thirteen vaginal swabs pre-enriched in LIM broth were inoculated onto *Brilliance* GBS Agar and chromID™ StreptoB Agar (bioMérieux) and incubated according to manufacturer's instructions. Presumptive GBS colonies were confirmed using catalase, Pastorex™ Strep B (Bio-Rad), MALDI-TOF Mass Spectrometry and / or CAMP tests.

**Results:** *Brilliance* GBS Agar demonstrated a greater ability to detect GBS from vaginal swabs than chromID StreptoB Agar. Additionally, percentage inhibition and negative predictive value (NPV) were also higher on *Brilliance* GBS Agar.

## Introduction

GBS is recognised as the most frequent cause of severe early onset (less than 7 days old) infection in neonates with an incidence in the UK of 0.5/1000 births<sup>1</sup>. Although routine screening for antenatal GBS carriage is recommended in the US by the Centers for Disease Control and Prevention (CDC)<sup>2</sup>, Switzerland is one of many countries that has implemented universal screening for GBS colonization during pregnancy.

*Brilliance* GBS Agar is a transparent screening medium for the culture of *Streptococcus agalactiae* (GBS). GBS will grow as pink-coloured colonies on the medium (see Figure 1). The medium contains a combination of antibacterial compounds designed to inhibit the growth of a wide range of organisms commonly associated with human carriage. Any non-target organisms that are not inhibited, grow as either blue or purple colonies (see Figure 2).

**FIGURE 1. Typical growth of positive, pink GBS colonies on *Brilliance* GBS Agar after 24 hrs incubation.**



## Methods

### Sample Inoculation

On receipt by the University Hospital Basel, five hundred and thirteen vaginal swabs were inoculated into LIM enrichment broth (see figure 3) and incubated at 35±1°C for 18-24 hrs. Following incubation, the turbidity of each broth was recorded and 10 µL of each broth streaked onto *Brilliance* GBS Agar and chromID StreptoB Agar. Plates were incubated aerobically at 36±1°C for 18-24 hrs.

## Interpretation and confirmation

All presumptive positive GBS colonies (pink colonies on *Brilliance* GBS Agar and pink-red colonies on chromID StreptoB Agar) were confirmed using catalase, Pastorex™ Strep B, MALDI-TOF Mass Spectrometry and CAMP tests. MALDI-TOF was also performed on any atypical colonies seen on *Brilliance* GBS Agar.

## Data Analysis

Sensitivity, negative predictive value (NPV) and percentage inhibition (i.e. the percentage of organisms other than GBS that were inhibited from growing) were calculated for both of the media tested and are reported in Table 1.

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



## Results

### Sensitivity

The sensitivity of each of the media tested was calculated based on the number of plates demonstrating correctly coloured GBS colonies. After 24 hrs incubation, *Brilliance* GBS Agar achieved 100.0% sensitivity, which was statistically significantly greater than sensitivity achieved on chromID StreptoB Agar (93.1%, p-value = 0.0015).

### NPV

NPV was calculated as the proportion of negative samples that were correctly diagnosed by each of the media tested. As shown in Table 1, *Brilliance* GBS Agar achieved 100.0% NPV compared to 97.6% for chromID StreptoB Agar.

### Non-GBS inhibition

Percentage inhibition of organisms other than GBS (i.e. the number of swabs showing no growth of non-target organisms) was considerably higher on *Brilliance* GBS Agar than on chromID StreptoB Agar. Due to the higher level of inhibition, the level of background growth on the plate was much lower, resulting in a much “cleaner” plate, improving the isolation of GBS colonies.

**TABLE 1. Sensitivity and NPV of *Brilliance* GBS Agar and chromID StreptoB Agar after 24 hrs incubation**

Performance Measurement	<i>Brilliance</i> GBS Agar	chromID StreptoB Agar
Sensitivity	100.0% (95% CI = 100.0%)	93.1% (95% CI = 90.9 – 95.3%)
NPV	100.0% (95% CI = 100.0%)	97.6% (95% CI = 96.3 – 98.9%)

## Conclusion

Following enrichment in LIM broth, *Brilliance* GBS Agar was able to detect a statistically significantly greater number of GBS than chromID StreptoB Agar, achieving 100.0% sensitivity. *Brilliance* GBS Agar also demonstrated a greater level of inhibition of non-target organisms.

**FIGURE 3. LIM enrichment broth**



## Acknowledgements

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## References

1. Prevention of early onset neonatal group B streptococcal disease. (May 2003). Royal College Obstetricians and Gynecologists. Guideline no 36.
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