Abstract

**Background:** The Centers for Disease Control and Prevention recommend screening pregnant women between 35 and 37 weeks of pregnancy to determine Group B Streptococcus (GBS) carrier status and antimicrobial susceptibility testing on GBS isolates from penicillin-allergic women.

**Objective:** The purpose of this study was to compare LIM broth RambaQuick (6 and 24 hour incubation) subculture to CHROMagar Carrot to Carrot broth subculture to Detect.

**Methods:** A total of 115 vaginal/rectal swabs (Copan Diagnostics Inc., Murrieta, CA) submitted for routine prenatal GBS screenings were evaluated by Carrot broth (Hardy Diagnostics, Santa Maria, CA) subculture to GBS Detect (Detect; Hardy Diagnostics, Santa Maria, CA) and LIM RambaQuick Strep B broth (LIM broth, CHROMagar, Paris, France) subculture to CHROMagar Strep B (CHROMagar, Paris, France). Both the Carrot and LIM broths were inoculated with approximately 500 µL of the swab-modified Liquid Amies transport solution and the swab was placed in the Carrot broth (according to the manufacturer’s instructions). All LIM broths and CHROMagars were incubated aerobically, in non-CO2, at 35°C. Each LIM broth was subcultured to CHROMagar after incubating for 6 hours and 24 hours. CHROMagars were incubated 24 hours and were examined for muave colonies, which on CHROMagar to characteristic of beta-hemolytic and non-hemolytic GBS. All Carrot broths and Detect agars were incubated aerobically at 35°C. Carrot broths were incubated for 24 hours and examined for any orange color in the broth, which indicates GBS. GBS negative broths were subcultured to Detect plates. Detect plates were incubated 24 hours and examined for any beta-hemolytic colonies, which on Detect is a characteristic of beta-hemolytic and non-hemolytic GBS. Performance calculations were determined using Carrot broth subculture to Detect as the reference method.

**Results:** LIM broth (6 hour incubation) subculture to CHROMagar had a sensitivity and specificity of 91.8% and 86.4%, respectively, while LIM broth (24 hour incubation) subculture to CHROMagar had a sensitivity and specificity of 93.9% and 81.8%, respectively.

**Conclusions:** LIM broth subcultures to CHROMagar have high sensitivities and may yield high specificities with confirmation of positive CHROMagars by latex agglutination. The broth incubation time, 6 versus 24 hours, did not appear to affect performance characteristics of LIM broth subculture to CHROMagar.

Introduction

The Centers for Disease Control and Prevention recommend screening pregnant women between 35 and 37 weeks of pregnancy to determine GBS carrier status and antimicrobial susceptibility testing on GBS isolates from penicillin-allergic women. We compared LIM RambaQuick Strep B subculture (LIM broth) to CHROMagar Strep B (CHROMagar) to Carrot broth subculture to Detect for the detection and isolation of GBS.

**Figure 1:** Study design for the evaluation of culture-based methods for detection of Group B Streptococcus.

- LIM broth incubation
- Carrot broth incubation
- CHROMagar subculture
- Positive results
- Negative results
- **TABLE 1:** Performance of LIM RambaQuick subculture to CHROMagar Strep B compared to Carrot broth subculture to Detect (N=115).

<table>
<thead>
<tr>
<th>Method</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
<th>PPV (%)</th>
<th>NPV (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIM RambaQuick (6 hr) subculture to CHROMagar</td>
<td>91.8 (79.5-97.4)</td>
<td>86.4 (75.2-95.2)</td>
<td>83.3 (20.2-91.6)</td>
<td>94.4 (83.3-97.9)</td>
</tr>
<tr>
<td>LIM RambaQuick (24 hr) subculture to CHROMagar</td>
<td>91.8 (82.1-98.4)</td>
<td>87.0 (70.0-98.9)</td>
<td>97.3 (96.5-98.4)</td>
<td>96.7 (84.5-98.6)</td>
</tr>
</tbody>
</table>

There were 13 discordant results of LIM broth (6 hour incubation) subculture to CHROMagar and 15 discordant results of LIM broth (24 hour incubation) subculture to CHROMagar when compared to Carrot broth subculture to Detect (TABLE 2).

**Figure 2:** CHROMagar negative for GBS.

**Figure 3:** CHROMagar positive for GBS.

**Conclusions:**

LIM broth subcultures to CHROMagar have high sensitivities and may yield high specificities with confirmation of positive CHROMagars by latex agglutination or other test. The broth incubation time, 6 versus 24 hours, did not appear to affect performance characteristics of LIM broth subculture to CHROMagar.