Evaluation of Colorex Strep A Chromogenic Agar for Recovery of Group A *Streptococcus* Using Automation and Decreased Incubation Length

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Introduction

- Colorex Strep A agar is a chromogenic agar that is selective for Group A *Streptococcus* (GAS).
- The aim of the study was to evaluate the overall performance of Colorex Strep A compared to blood agar (BAP) for throat cultures, including decreased incubation lengths and laboratory automation.

Materials & Methods

- 86 throat Eswabs were inoculated onto BAP and Colorex Strep A agar, incubated on the Kiestra system, and evaluated after 10, 18, and 36 h of incubation.
- Patient ages ranged from 1 to 30 years, with a median of 6 years.
- All specimens were collected in the emergency department.
- All microbiology staff trained in culture workup participated in the study. GAS appear as red colonies on Colorex Strep A plates and were confirmed with MALDI-TOF MS. Other *Streptococcus* species appear as metallic blue or colorless colonies.
- Beta-hemolytic colonies on BAP were identified using MALDI-TOF MS or ruled out using biochemical testing (e.g., catalase test).
- The reference result was a composite of growth on BAP and Colorex Strep A.

Figure 1. Colorex Strep A and BAP at 10, 18, and 36h of incubation, positive for GAS

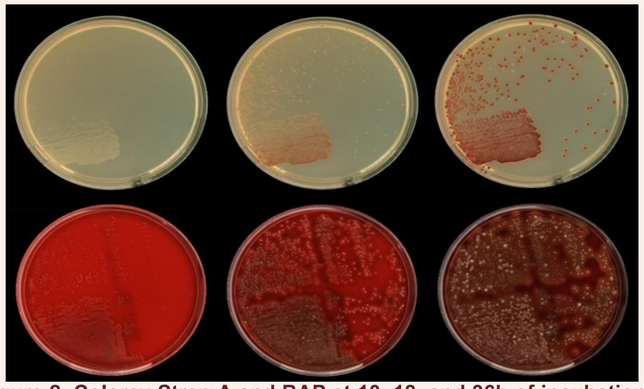
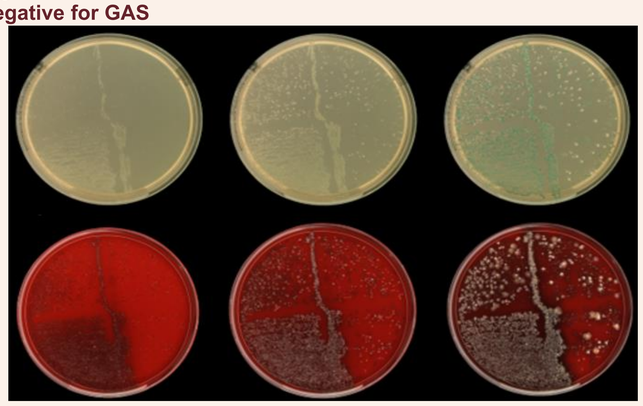


Figure 2. Colorex Strep A and BAP at 10, 18, and 36h of incubation, negative for GAS



Results

- Overall agreement between media types was 96.5% (83/86).
- GAS was recovered in 28 total specimens, with 96.4% (27/28) recovered on BAP and 92.9% (26/28) recovered on Colorex Strep A.

Figure 3. Cumulative percentage of GAS identified from BAP and Colorex Strep A after 10, 18, 36, and 48 h

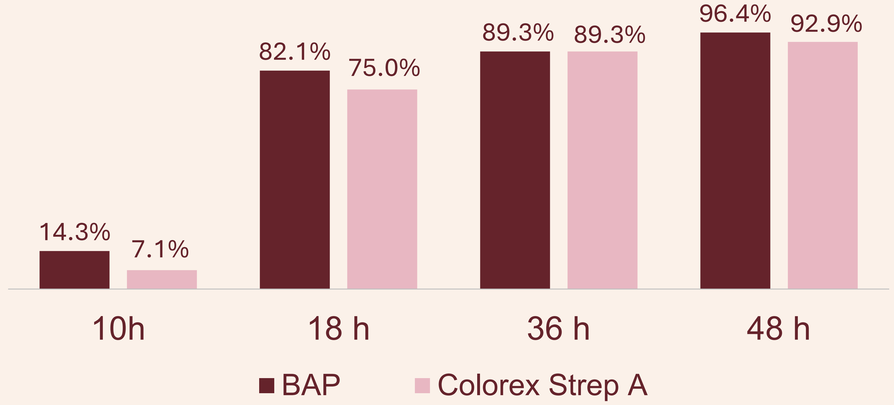
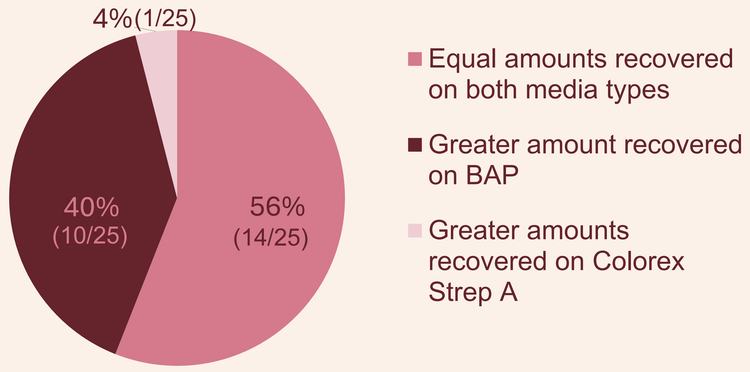


Table 1. Agreement between BAP and Colorex Strep A

		Colorex Strep A	
		GAS	No GAS
BAP	GAS	25 (29.1%)	2 (2.3%)
	No GAS	1 (1.2%)	58 (67.4%)

- Relative abundance was categorized as rare, scant, moderate, or abundant.
- Scant GAS was recovered on BAP but not Colorex Strep A in two cultures, and scant GAS was recovered on Colorex Strep A but not BAP in one culture.

Figure 4. Relative abundance comparison between media (n = 25)



Results, cont.

Table 2. Relative abundance of GAS recovered on BAP and Colorex Strep A

		Colorex Strep A				
		No GAS	Rare	Scant	Moderate	Abundant
BAP	No GAS	58	0	1	0	0
	Rare	0	2	1	0	0
	Scant	2	6	7	0	0
	Moderate	0	0	0	0	0
	Abundant	0	0	1	3	5

- Four BAP cultures required subculture before identification of GAS. Two had a beta hemolytic colony that was subbed at 36 h of incubation, with identification completed at 47 h. Two had a beta hemolytic colony subcultured at 18 h, with a total time to identification of 30 h and 36 h.
- Workup of BAP cultures required nine catalase tests, three non-GAS MALDI-TOF MS attempts to rule out GAS, and seven secondary subcultures to isolate the beta hemolytic colony from mixed growth prior to identification or rule-out.
- Colorex Strep A cultures did not require any subcultures or biochemical testing.

Table 3. Cost analysis of BAP and Colorex Strep A workflows

	Total Cost for All Cultures (including media, MALDI, & biochemical testing)	Average Cost per Culture
BAP	$93.60	$1.09
Colorex Strep A	$516.02	$6.00

Conclusions

- BAP demonstrated a minor advantage in growth after 10 h and 18 h as well as overall recovery
- Colorex Strep A enhances operational efficiency by eliminating routine secondary subcultures, catalase testing, and non-GAS MALDI-TOF attempts required by traditional BAP. However, it is more expensive than BAP, including extra reagent costs required for workup of BAP cultures.

Acknowledgments

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