Isolation of Uropathogens on Chromogenic Agar versus Standard Dipslides from Urine Collected with and without Preservative

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REvised ABSTRACT

BACKGROUND: The preservation of uropathogens during transport, and subsequent rapid determination of significant organisms is important for appropriate treatment of urinary infections. BBL™ CHROMagar™ (BD Diagnostic Systems Inc.) was compared to Dip N'Count™ (Starplex Scientific Inc.) for accuracy of bacterial counts and rapid identification of urinary pathogens from fresh and preserved urine specimens.

METHODS: 400 urine specimens were collected into tubes with and without boric acid-sodium formate preservative (BD). The unpreserved specimen was inoculated within 2 hours; the preserved specimen was held at room temperature for 24 hours. Specimens were inoculated to 5% sheep blood agar, MacConkey agar, and CHROMagar™ using a 1 µL loop, and dipped or poured over the Dip N' Count™ according to manufacturer’s instructions. After 16 – 20 hours of incubation at 35°C, colonies were quantitated and attempts were made to presumptively identify potential pathogens.

RESULTS: Organisms that were correctly identified by CHROMagar™ were: E. coli (8 samples), Enterococcus sp. (7), Klebsiella/Enterobacter/Serratia (4), and S. agalactiae (1). There was 95% agreement in the quantity and identity of the organisms isolated on CHROMagar™ after storage in preservative compared to urines that were plated directly. There was 86% agreement in quantity and identity of the organisms isolated between the urine cultured from the direct specimen and urine cultured from the preserved urine by Dip N'Count™. Overall there were no significant differences between colony counts for preserved and non-preserved urine samples either plated directly on CHROMagar™ or applied to the dipslide.

CONCLUSION: BBL™ CHROMagar™ compared favorably to Dip N'Count™ for quantitation and rapid identification of urinary tract pathogens. The use of CHROMagar™ can reduce technologist time and media required, enable faster detection of mixed cultures and facilitate rapid identification of E. coli and Enterococcus sp.

INTRODUCTION

A new chromogenic media was evaluated for the primary isolation and rapid identification of urinary pathogens. Urinary tract samples are the most common specimens submitted to the diagnostic microbiology laboratory. Escherichia coli is the most common organism associated with urinary tract infections followed by other Enterobacteriaceae and Enterococcus sp. Chromogenic media allows for the rapid identification of these organisms without confirmatory testing. BBL™ CHROMagar™ Orientation (BD Diagnostic Systems Inc., Sparks, MD) was compared to dipslide culture (Dip N'Count™, Starplex Scientific Inc., Etobicoke, Ont.) for the ability to determine accurate bacterial counts and rapid identification of urinary pathogens from fresh and preserved urine specimens.
RESULTS

400 urine specimens collected from outpatients at the University of Alberta Hospital during May and June 2004 were inoculated to a Dip N’Count™ (dipslide) at the collection site for routine diagnostic bacterial culture. Each specimen was also aliquoted into BD Vacutainer® Urine Products (BD Diagnostic Systems Inc., Sparks, MD), with and without boric acid preservative, using a transfer straw. The unpreserved specimen was inoculated within 2 hours to 5% sheep blood agar, MacConkey agar, and CHROMagar™ using a 1 µL loop. The preserved specimen was held at room temperature for 24 hours and inoculated in the same manner to the same media and to a dipslide. Results on all media were interpreted at 24 hours and quantified according to each methodology.

METHODS

CONCLUSIONS

■ BBL™ CHROMagar™ compares favorably to Dip N’Count™ in its ability to correctly quantitate and rapidly identify urinary tract pathogens. CHROMagar™ was easy to use and identified the most common urinary pathogens E. coli and Enterococcus sp. The use of CHROMagar™ can reduce the amount of media required, reduce technologist time, enable faster detection of mixed cultures, and facilitate rapid identification of E. coli and Enterococcus sp. Rapid identification and isolation may allow for a decreased time to reporting susceptibilities of pathogens. CHROMagar™ did not support the growth of Lactobacillus sp. as well as the Dip N’ Count™, but individual laboratories would need to determine whether reporting Lactobacillus sp. is important clinically.

■ Urine that was stored in preservative maintained clinically significant organisms without overgrowth.

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