Sensitivity and specificity of the New Chromogenic Media CHROMagar™ MRSA for detecting Methicillin Resistant Staphylococcus aureus

C. de Gialluly1, J. Loulergue1, G. Baty1, A. Rambach2, R. Quentin1
1. Medical University, Tours, France; 2. CHROMagar, Paris, France

Introduction
Simplified methods for detection of MRSA (methicillin resistant Staphylococcus aureus) have been proposed using direct isolation on media containing mannitol for recognition of S. aureus and oxacillin for selection of methicillin resistance. However, sensitivity and specificity of such methods remain low.

We assessed a new chromogenic medium (CHROMagar™ MRSA, CHROMAGAR, Paris, France) designed to allow direct detection of MRSA using 249 pure strains of MSSA and MRSA from our pathogen collection. Preliminary results of an ongoing study aimed at detecting MRSA carriage in clinical nasal specimens are also shown.

Materials and Methods

Medium: CHROMagar™ MRSA is composed of a base medium characterizing S. aureus colonies by a specific mauve colour supplemented by an MRSA-selective component (not described by the manufacturer) considered to be more sensitive than oxacillin for rapid detection of MRSA strains with heterogeneous resistance.

Strains: 249 pure strains of S. aureus from our University Hospital clinical specimen collection.

All strains were isolated on blood agar and then isolated on CHROMagar™ MRSA by the quadrant isolation method.

Plates were incubated for 24h at 37°C and read for growth of mauve coloured colonies.

Reference strains: S. aureus ATCC 25923, S. aureus CIP 6525. (Table 1)

Results
In this study, CHROMagar™ MRSA proved to be efficient for the detection of MRSA with a 100% sensitivity (120/120 MRSA strains detected) and a 100% specificity (no MSSA growth).

Conclusion 1
CHROMagar™ MRSA appears to be a simple and sensitive method, permitting rapid and direct detection of MRSA.

Materials and methods
Between February and March 2004, nasal swabs were obtained from 114 consecutive patients admitted in two intensive care units and from 9 other patients known to be infected with MRSA.

Medium: CHROMagar™ MRSA (CAMR) and Trypcase soy agar plates with 5% horse blood (BA) (bioMérieux) were simultaneously inoculated, without enrichment; isolation by quadrant method.

Incubation at 37°C, reading at 24 h and 48 h.

Identification of S. aureus: Gram stain, catalase test, positive agglutination for Pastorex Staph Plus (Biorad) and confirmation by API ID32 STAPH system (bioMérieux) and tube coagulase test as needed;

Susceptibility testing: Methicillin resistance was detected by the disk-diffusion method on Mueller Hinton agar (biorad) according to the guidelines of the Comité Français de l’Antibiogramme, and by using the MRSA-Screen latex agglutination test (bioMérieux) as needed.

Results
48/123 patients (39%) were S. aureus carriers, 25 of them carrying confirmed MRSA strains.

23/23 MSSA strains were detected by BA, and no MSSA strains were detected by CAMR.

24/25 MRSA strains were detected by CAMR. The strain not identified by this medium corresponded to a very low inoculum.

Conclusion 2
Preliminary results show that CHROMagar™ MRSA provides a convenient, simple, sensitive, specific and time-saving method for the detection of MRSA nasal carriage.