EV0405
ePoster Viewing
Susceptibility testing methods

CHROMagar mSuperCarba screening followed by Rapidec Carba NP test for detection of carbapenemase producers in Enterobacteriaceae

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Background: The number of carbapenemase-producing Enterobacteriacea (CPE) is increasing worldwide. Carbapenem resistance in Enterobacteriaceae has become worrisome since the spread of KPC-type carbapenemases from *Klebsiella pneumoniae* in the 2000s. The main groups of carbapenemases that have been identified in Enterobacteriaceae are Ambler class A (KPC-type), which are able to hydrolyze all β-lactams except cephamycins, the zinc-dependent Ambler class B carbapenemases (NDM, VIM and IMP), which are metallo-β-lactamases (MBL) incapable of hydrolyzing aztreonam, and the Ambler class D (OXA-48-like) carbapenemase, which hydrolyze carbapenems and weakly (or not at all) broad-spectrum cephalosporins. Chromogenic and nonchromogenic screening methods for detecting CPE bacteria have been developed. Our objective was to characterize the sensitivity and specificity of a novel chromogenic medium called CHROMagar mSuperCARBA for detecting carbapenemases, including OXA-48-type producers, compared to SUPERCARBA medium, which is able to select for KPC, MBL and OXA-48-type producers, but is not chromogenic.

Material/methods: A total of 117 clinical strains of enterobacteria were used. This collection included 13 strains with reduced susceptibility to carbapenems (ESBL, overexpressed AmpC and/or porin deficiency), 18 isolates susceptible to carbapenems, 36 OXA-48-type producers, 17 KPC producers, 12 NDM producers, 13 VIM producers, and 8 IMP producers. The novel chromogenic screening medium is called CHROMagar mSuperCARBA (CHROMagar company, France) which has been designed for the detection and isolation of carbapenemase-producing Enterobacteriaceae, including those isolates with low-level resistance to carbapenems. This medium contains chromogenic molecules that permit the identification of enterobacterial species. We compared our results with those using the SUPERCARBA medium.

Results: CHROMagar mSuperCARBA is as sensitive and as specific as SUPERCARBA medium (100% and 100%, respectively) for detecting KPC, MBL and OXA-48-type producers and is compatible with posterior testing using RAPIDEC NP.

Conclusions: Our results suggest that a good workflow would be to perform initial screening using the novel chromogenic CHROMagar mSuperCARBA medium to select carbapenem-resistant isolates followed by the use of the commercial RAPIDEC NP test for detecting carbapenemase activity.