O044

2-hour Oral Session

Detection of carbapenemases

RAPIDEC® CARBA NP, for rapid detection of carbapenemase producers in Gram-negatives

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Objective : Rapid identification of carbapenemase producers in gram negatives is the corner stone to prevent their diffusion. Rapid detection tests for detecting carbapenemase activity offers novel perspectives for patient management, either for antibiotic stewardship or for infection control. Here we have evaluated the performance of the RAPIDEC® CARBA NP test (bioMérieux) from bacterial cultures.

Methods : The RAPIDEC CARBA NP test (RAPIDEC) is based on biochemical detection of the *in vitro* hydrolysis of a carbapenem (imipenem). Carbapenemase activity is evidenced by the color change (red to yellow) of a pH indicator due to carboxyl acid formation resulting from imipenem hydrolysis. This test corresponds to the industrial development of the Carba NP test. The performance of both tests was compared by testing 176 isolates for which ß-lactam resistance mechanisms had been characterized in detail. The strain collection included 101 carbapenemase-producing isolates (60 Enterobacteriaceae, 21 *Pseudomonas* spp., 20 *Acinetobacter* spp.,) and 75 isolates that did not produce carbapenemases, including AmpC overproducers, ESBL producers, and isolates being resistant to carbapenems due to permeability defects. Carbapenemase-producing *Enterobacteriaceae* produced enzymes of the OXA-48 (n=20), VIM (n=18), KPC (n=6), and NDM (n=15) types.

Results: A total of 96 out of 101 carbapenemase-producing isolates gave positive results using the RAPIDEC (sensitivity, 95%). Positive results were obtained in less than 30 min after sample preparation. Sensitivity was 99% for Enterobacteriaceae, with only a single false-negative (a carbapenem-susceptible *P. mirabilis* producing VIM-1). Three isolates gave a false-positive result (ESBL or AmpC overproducers). For Enterobacteriaceae, sensitivities and specificities were equivalent between the RAPIDEC and the Carba NP. Regarding *Pseudomonas* and *Acinetobacter*, the RAPIDEC showed an excellent performance, particularly in detecting carbapenemase-hydrolyzing class D ß-lactamases.

Conclusion : The RAPIDEC CARBA NP test has good/excellent sensibility and specificity. Its use requires neither specific home-made preparation, nor expertise, nor special equipment. It is perfectly adapted for routine detection of carbapenemase producers in any lab.