48.005

In vitro activity of biapenem against *Burkholderia pseudomallei*

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Background: *Burkholderia pseudomallei*, a gram-negative bacterium, causes in humans and animals a disease called melioidosis. Biapenem has a broad spectrum of in vitro antibacterial activity against many gram negative and gram-positive aerobic and anaerobic bacteria, including those producing $-lactamases. The objective of the study was to determine in vitro activity of biapenem against *Burkholderia pseudomallei*

Methods: 110 clinical isolates of *B. pseudomallei* from different patients were selected from our collection. In vitro susceptibility of biapenem was determined by agar dilution method and Kirby-Bauer disc diffusion. Paper discs containing biapenem 10 μg per disk (Eiken Chemical Co. Ltd., Japan) and the standard powder of biapenem (Meiji Seika Kaisha Ltd. Pharmaceutical Division, Japan) were provided by Meiji Pharmaceuticals (Thailand). The methodology used for susceptibility testing was direct colony suspension according to guidelines suggested by CLSI. The proposed breakpoints for inhibition zone diameter of biapenem recommended by the manufacture are >20 mm for susceptible, 15-19 mm for intermediate and <14 mm for resistant.

Results: All strains of *B. pseudomallei* had inhibition zone diameter greater than 39 mm. The MIC50 and MIC90 of biapenem against *B. pseudomallei* were <0.125 and 0.25 μg/ml respectively. All strains of *B. pseudomallei* had biapenem MIC less than 0.64 μg/ml.

Conclusion: Biapenem is very active against *B. pseudomallei* and biapenem could be analternative therapy for melioidosis.

doi:10.1016/j.ijid.2010.02.1916

48.006

Role of Efflux pumps in the development of quinolone-resistance in Peruvian *Escherichia coli* isolates

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Background: Active efflux pumps are important in the development of antibiotic-resistance. Inhibitor efflux pumps are under investigation because the possibility to be used in the future together with antimicrobial agents. Phe-Arg-$- naphthylamide (PAN) is a broad spectrumefflux pump inhibitor on quinolone susceptibilities in microorganisms such as *Escherichia coli*. The objective of this study is to determine the effect of PAN in the MIC of quinolones, to relate its effect with the presence of mutations in *gyrA* and *parC* genes and with the presence of transferable mechanisms of quinolone-resistance (*qnr* and *aac(6')Ib-cr* genes) in *Escherichia coli* peruvian isolates.

Methods: MICs for nalidixic acid (NAL) and ciprofloxacin (CIP) were determined in the presence or absence of PAN (20 mg/L) by agar dilution in 67 Nalidixic Acid resistant *E.coli* isolates. Quinolone resistance mechanisms were investigated by PCR amplification of *gyr*A, *par*C, *qnr*A, *qnr*B, *qnr*S and *aac (6')Ib* genes. Amplified fragments of *gyr*A and *par*C were sequencied to detect the presence of mutations.

Results: The typical mutations in gyrA (Ser83 1 Leu; Asp87 1 Asn) were found in 38 and 9 isolates respectively, in the parC mutations (Ser80 1 Ile; Glu84 1 Val, Gly) were found in 15, 4 and 1 isolates respectively. Seven strains were PCR positives for QnrB and eight for aac (6')Ib. No QnrA or QnrS positives were found. In 30 isolates, the effect of the PAN in the MIC of NAL was higher than 4 folds, in the half of them (n = 15) the effect was higher than 8 folds, while no effect in the MIC of CIP was observed. In 6 isolates the NAL resistance was associated exclusively to the effect of PAN-inhibible efflux pumps.

Conclusion: PAN posses a high effect in the NAL MIC, suggesting a high relevance of PANinhibible efflux pumps in the development of quinolone-resistance. This fact has also been supported by the presence of isolates in which only an effect of this kind of pumps was observed. Additionally presence of transferable quinolone-resistance mechanisms has been detected in the area.

doi:10.1016/j.ijid.2010.02.1917