Catherine Mullié, J Infect Dis Ther 2017, 5:6(Suppl)
DOI: 10.4172/2332-0877-C1-031

6th Euro-Global Conference on

INFECTIOUS DISEASES

September 07-09, 2017 | Paris, France

Catherine Mullié

University of Lille, France

Comparison of efflux pumps expression in ciprofloxacin-resistant *Pseudomonas aeruginosa* clinical and environmental strains from Algeria and France

Statement of the Problem: *Pseudomonas aeruginosa* is a Gram-negative ubiquitous microorganism found in various environmental niches as well as in human infections. It is innately resistant to many commercially available antibiotics and has acquired a wide array of resistance mechanisms, tremendously complicating the clinical handling of *P. aeruginosa* infections. Antibiotic resistance can be mediated by several molecular mechanisms, one of them being the efflux of antibiotics from the bacterium through efflux pumps. In *P. aeruginosa*, antibiotic efflux is mainly mediated by pumps belonging to the Resistance-Nodulation-Division family: *MexA*B-OprM, MexCD-OprJ, MexEF-OprN and MexXY-OprM. This work aimed to compare their expression in environmental and clinical strains of *P. aeruginosa* from Algeria and France either resistant or susceptible to fluoroquinolones to evaluate whether expression patterns would vary according to the sample origin and/or country.

Material & Methods: Clinical strains were collected from Amiens and Lille hospitals for France and Saida hospital for Algeria. Environmental strains were mostly isolated from water samples. Susceptibility to ciprofloxacin was evaluated by E-test and the broth microdilution method with and without an efflux inhibitor. Efflux pumps expression was then measured through a qRT-PCR experiment, using *mexB, mexD, mexF and mexY* as target genes.

Findings: 149 clinical and 30 environmental *P. aeruginosa* strains were included. According to EUCAST breakpoints, 29.8% and 11.1% of French and Algerian clinical strains were resistant to ciprofloxacin, respectively. None of the environmental strains were resistant to ciprofloxacin. Analysis of qRT-PCR data showed that mexY expression was significantly increased in a majority of ciprofloxacin-resistant clinical strains while *mexA* was decreased.

Conclusion & Significance: This study showed that ciprofloxacin-resistant strains were more common in clinical *P. aeruginosa* isolates than in environmental one. The design of efflux inhibitors targeting MexXY-OprM efflux pump could therefore be of use to restore the activity of known antibiotics.

Biography

Catherine Mullié has obtained her PhD in Microbiology and a PharmD at the University of Lille, France, in 1999 and Post-doc at the Faculté de Medicine in Amiens (Laboratoire d'Immunologie, INSERM-EMI 0351). She was appointed as Assistant Professor at the Faculté de Pharmacie in Amiens in 2000 and joined the LG-2A (Laboratoire de Glycochimie des Antimicrobiens et des Agroressources, UMR 7378 CNRS) in 2008. She has been a Member of the French Society for Microbiology since 2000. Her research is focused on the development of new antimicrobial and antimalarial drugs, with a special interest in efflux-mediated antibiotic resistance in *Pseudomonas aeruginosa* and Acinetobacter baumannii. She is currently the Head of a bilateral project funded by France and Algeria (Partenariat Hubert Curien Tassili) on this topic.

catherine.mullie@u-picardie.fr

Notes: