Cystic Fibrosis (CF) is an autosomal recessive genetic disease, affecting mainly Caucasian population. It is characterized by overproduction of sticky, thick mucus in many organs such as the lung, pancreas, and gastrointestinal tract. This offers an ideal environment for proliferation of opportunistic pathogens. Paenigens is the main microorganism causing chronic respiratory tract infections in CF patients older than 25 years (1). These patients, therefore, require repetitive and prolonged antibiotic treatments with anti-pseudomonal drugs.

Macrolides are deemed to be ineffective against P. aeruginosa (2). However, our laboratory has shown that when cultured in biological media (Figure 1), macrolides could actually achieve antimicrobial activity against Paenigens collected from CF patients. These patients, therefore, require repetitive and prolonged antibiotic treatments with anti-pseudomonal drugs.

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Materials & Methods

Bacterial isolates: PAO1 (fully sequenced genome) was used as reference strain. 333 strains from CF patients were examined in parallel to 48 strains isolated from patients suffering from pneumonia (Figure 3). No mutations were detected in 48 strains collected from patients suffering from pneumonia.

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• Mutations in the 235 subunit of bacterial rRNA could explain the high MICs of AZM recorded for strains coming from CF patients.

• Mutations in positions 2045 and 2046 confer higher resistance levels than those in 2011, probably because these two positions are closer to the macrolides binding site of macrolides in strains harboring elevated MICs.

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Conclusions

Our aims were focused on regions were mutations were previously purified and sequenced, looking for an increased intracellular activity of the efflux systems (3). In combination, steps 1 and 4 becomes more permeable, which allows for an increased intracellular accumulation of macrolides through a still undefined mechanism of action of macrolides.

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