


Susceptibility patterns and cross-resistance evaluation of several biofilm-producing *P. aeruginosa* challenged by antibiotics

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Paeruginosa (PA) is an opportunistic pathogen responsible for high percentage of nosocomial infections. Its virulence and persistence rises when bacteria switch from planktonic to biofilm state and when facing antimicrobial pressures. This study aimed to evaluate the antimicrobial tolerance and regrowth of several biofilm-producing PA after antibiotic treatment, and the occurrence of cross-resistance to other antimicrobials.

PAO, ATCC, CGCT and an isolated strain were used to form 1-day old biofilms in the presence of ciprofloxacin (CIP). Biofilm regrowth was evaluated after 48h, 72h and 96h after addition of, respectively, fresh medium, medium with antibiotic and antibiotic-free medium again. The final 4-days old biofilms were then attacked with CIP, gentamicin, rifampicin and benzalkonium chloride.

After 24h and 72h of biofilm growth, it was observed a good reduction of the biofilm mass, respiratory activity and CFU/cm². However, PA biofilm regrowth with similar or even higher cell numbers, comparatively to control, were noticed always the antibiotic-free medium was added. Data allowed speculating that the adhered bacteria that survived to antibiotic therapy may become more resistant to CIP or to other antimicrobials. Luckily, data did not show evidence of cross-resistance to the antimicrobials tested. Biofilms formed in the presence of CIP appeared to be more susceptible to the anti-biofilm action of antimicrobials.

Although it has been observed marked biofilm regrowth after good levels of biofilm eradication due to antibiotic treatment, the resulting biofilms challenged by CIP seemed to be less tolerant to the action of other antimicrobials.

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