

**Título: PSEUDOMONAS AERUGINOSA CARBAPENEMS RESISTANT ISOLATED FROM A BURN UNIT IN AN HOSPITAL LOCATED IN RIO DE JANEIRO CITY**

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**Resumo:**

*Pseudomonas aeruginosa* has a remarkable capacity to cause severe infections in burn patients and has been one of the most important causes of morbidity and mortality in these patients. Prior to polymyxins, carbapenems are the last effective therapeutic options against this pathogen. Therefore the increasing of resistance to these antibiotics has been the cause of global concern. This study aimed to evaluate *P. aeruginosa* carbapenems resistant isolated from burn patients and burn unit environment in order to determine the presence of virulence and resistance genes and their capacity to form biofilms even as their response to biocides. The antibiotic resistance was carried out by disk diffusion according to CLSI. PCR was performed to investigate the presence of virulence genes (*exoS* and *exoU*) and resistance genes that encode ESBL's (*blaPER-1*, *blaCTX-M*, *blaOXA-10*) and MBL's (*blaVIM*, *blaIMP* and *blaSPM*). The biofilm assay was performed using stainless steel coupons, treated with and without biocides (chlorhexidine 4%, sodium hypochlorite 1% and hydrogen peroxide 5%). Of all 37 isolates analyzed, 8 were carbapenems resistant. From these, 5 carried the *exoU* gene and showed a high capacity to form biofilm. Following biocide treatment towards formed biofilms, all strains were susceptible to the 3 tested biocides. None of the resistance genes surveyed were found, which lead us to believe that other mechanisms can be involved like loss of outer membrane protein (OprD) and efflux pumps overexpression. The ExoU exoenzyme is very cytotoxic and when associated with a higher ability to form biofilm which favors the persistence of infection, increases the severity of the disease. These factors combined with resistance to carbapenems, aggravate the situation of these patients, reducing the therapeutic options. Furthermore, our study has found that the biocides tested were effective against biofilms formed and if the burn unit environment disinfection is performed correctly it can prevent cross-contamination between patients.

**Palavras-chaves:** *Pseudomonas aeruginosa*, carbapenems, *exoU* gene, biofilm

**Agência Fomento:** FAPERJ, CAPES, CNPq