P3: 76

Insights into *Pseudomonas aeruginosa* and *Candida albicans* consortia challenged by antimicrobials

Tânia Grainha[1], Maria Rodrigues[1], Susana Lopes[1], Anália Lourenço[1,2], Mariana Henriques[1], Maria Olívia Pereira[1]

[1] CEB - Centre of Biological Engineering, LIBRO - Laboratory of Research in Biofilms Rosário Oliveira, University of Minho, Campus de Gualtar, 4710-057 Braga, Portugal; [2]ESEI-Department of Computer Science – University of Vigo, Edificio politécnico, Campus Universitario As Lagoas s/n, 32004 Ourense, Spain; raquel.r-1993@hotmail.com

Ventilator associated pneumonia (VAP), an usual nosocomial infection in the intensive care units and the most common in mechanically ventilated patients, is a serious problem due to high mortality and morbidity rates associated. The presence of the endotracheal tube is the principal risk factor for developing VAP because its surface is prone to microbial adhesion and the formation of biofilms, deserving thus high attention in clinical settings. Cell-to-cell communication is an important mechanism of interaction between VAP microorganisms, being involved in the process known as quorum-sensing (QS) that regulate the expression of virulence. To evaluate bacteria fungi cross-talk in co-infection, the biofilm-forming ability of *Pseudomonas aeruginosa* and *Candida albicans*, individually or jointly, before and after antibiotic and antifungal co-treatment was tested. Biofilms were characterized in terms of total mass and cell viability. Results showed that no antimicrobial combination was successful in the binary biofilms eradication. In some cases, the tolerance of the polymicrobial consortia was higher than that of single biofilms, highlighting that *P. aeruginosa* and *C. albicans* established synergistic relationships. To gain knowledge helping to explain those interactions, a quantitative real-time PCR approach was followed to inspect the expression profiles of some cell-cell communication genes involved in biofilm resistance. To overcome the tolerance issues, new antimicrobial combinatorial approaches using QS-inhibitors are being tested. Some combinations involving chlorogenic acid and ciprofloxacin displayed promising anti-biofilm potential.