resistance and persistence

Ana Margarida Sousa (1), A Rodrigues (1), MO Pereira (1)
(1) University of Minho, Portugal

Pseudomonas aeruginosa is a well-known opportunistic pathogen, responsible for high mortality in several human infections. Such infection success is partly due to its phenotypic plasticity to switch to "fitter" phenotypes, such as small colony variants (SCV), generally associated to increased antibiotic resistance, and biofilm formation within the human body. Once embedded in biofilms, *P. aeruginosa* can augment its pathogenicity and improve its ability to survive to stressful conditions, such immune defenses and antibiotics action. Moreover, the presence of SCV in biofilms has been pointed out as a biofilm mechanism responsible for its antibiotic resistance and persistence in human body. Regarding the impact of *P. aeruginosa* biofilms in disease management, it was considered crucial to determine the role of SCV in biofilm population and to study its correlation with antibiotic resistance and biofilm persistence ability. This study used several *P. aeruginosa* strains to form distinct biofilms in order to assess their antibiotic susceptibility to ciprofloxacin and colistin, virulence factors expression of biofilm-associated bacteria and to determine the presence and prevalence of SCV in biofilm population. The results obtained revealed that SCV presence in biofilm population is not strictly associated with biofilm antibiotic resistance. *P. aeruginosa* PAI2 demonstrated augmented resistance to both antibiotics, as other strains, but without the presence of SCV in biofilm population. Persistence was as well not strictly associated with SCV since CECT 111 biofilm-associated bacteria did not produced SCV but expressed relevant virulence factors (hemolysin, slime and piocyanin production, and motility) crucial to persistence in human body.