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Microaerophilic growth characteristics of
Pseudomonas aeruginosa importance to the
successful treatment of chronic infections in cystic
fibrosis lungs

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Patients with CF lung disease are susceptible to chronic infections by various pathogens, such as *Pseudomonas aeruginosa*. This pathogen is able to adapt to the environment in CF lungs, characterized by inflammatory defences, oxygen restriction, and poor nutrient availability. It is well established that, once *P. aeruginosa* infection is installed in the lungs, it is almost impossible to eradicate, due to sophisticated genotypic and phenotypic adaptation mechanisms that develop according to the stage of infection. Understanding those changes and the identification of specific characteristics that allow *P. aeruginosa* eradication before the onset of chronic infection is urgent. In this work, *P. aeruginosa* adaptation under microaerophilic and anaerobic conditions was assessed in terms of phenotypic characteristics, antibiotic susceptibility and expression of antibiotic resistance mechanisms (*mexAB* operon). Results showed, when compared with aerobic conditions, similar growth and emergence of intermediate resistance profiles for ciprofloxacin and imipenem, but no significant variation in operon *mexAB* expression. It was also observed an increase of colony morphotypes with the decrease of oxygen availability, mainly in 5% O₂. Nevertheless oxygen depletion has no significant effect on *P. aeruginosa* growth and *mexAB* expression, affecting, however, the phenotypic characteristics and antibiotic susceptibility profiles. Despite the overall observations, the microaerophilic environment with 5% O₂, seems to demonstrate a transient distinct behaviour which can be a point of evolution into chronic infection and as such a possible treatment target.