Title: ANALYSIS OF ADHESION AND BIOFILM FORMATION CAPACITY IN THE PRESENCE OF FURANONE MOLECULE IN *PSEUDOMONAS* SP. ISOLATED FROM HOSPITAL SEWAGE

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Abstract:

The genus *Pseudomonas* sp. is an opportunistic pathogen that is known to have the type IV pili as an important virulence factor. This type of pili is associated with adherence and biofilm formation on biotic and abiotic surfaces, as well as different types of motility, such as twitching and swarming. Due to the wide problem of persistent infections with *Pseudomonas* sp. related to the presence of biofilms, studies have identified furanone as inhibitor of quorum sensing, which ends up preventing the organization of the biofilm. This study aims to determine possible differences between strains of *P. aeruginosa* and other species of the genus, isolated from hospital sewage, about their ability to realize twitching and swarming motilities and to form biofilms, in the presence and absence of furanone, all these associated with the presence of type IV pili. The study comprises 45 bacterial strains of *P. aeruginosa* and 37 strains belonging to other species of the genus. For twitching and swarming motility tests, isolates were plated on Luria-Bertani agar (LB) 1 % and 0.5 % respectively. After the incubation period, the motility areas observed were measured. At the biofilm formation capacity test, bacterial suspensions were placed in 96 well plates in the presence of different glucose concentrations (0, 1 and 2.5%) and incubated for 24 hours followed by washing, fixation with methanol and staining wells with crystal violet. The reading was done in a spectrophotometer (570 nm). All tests will also be carried out in the presence of the furanone molecule (0.0625 %). In twitching and swarming tests,73.33% and 71.12 % of *P. aeruginosa* strains were positive respectively, while the strains of the other species showed no ability to perform twitching and 32, 44 % were positive for swarming. In the biofilm test, *P. aeruginosa* strains showed a greater ability to form biofilms, since only 11% of these isolates were unable to form biofilms in at least one of the glucose concentrations, compared with 36 % of isolates from other species of the genus. Thus, it is possible to conclude that there is a greater ability of *P. aeruginosa* strains to perform both types of motility and biofilm compared with other species of the genus.

Key Words: Adhesion, biofilms, furanone, *Pseudomonas*

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