TITLE: INHIBITION OF *Pseudomonas aeruginosa* TWITCHING MOTILITY BY 2,2-DIBROMO-3-NITRILOPROPIONAMIDE

AUTHORS: NEVES, M. L. R.[1]; ROCHA, W. R.[1]; NUNES, L. E.[1]; CAMPELO, P.[1]; XIMENES, E. A.[1]

Institution: [1]Universidade Federal de Pernambuco - Av. Professor Morais Rego, 1235 – 50670-901- Departamento de Antibióticos - Cidade Universitária, Recife - PE

ABSTRACT:

Pseudomonas aeruginosa is an opportunistic bacterium that produces several virulence factors facilitating its colonization and infection in host tissues. One these virulence factors is *twitching motility,* a cell surface translocation mediated by type IV pili and implicated by formation of biofilm on biotic and abiotic surfaces. That said, the aim of this study was to evaluate the effect of 2,2-dibromo-3-nitrilopropionamide (DBNPA) on twitching motility of five *P. aeruginosa* multi-drugs resistant strains. The metallo-β-lactamase SPM-1 producer *P. aeruginosa* strain and the PAO1 strain were included in this study. Then, the twitching assays were performed on medium whose composition is (g/L): Pancreatic digest of casein-17.0; peptic digest of soybean-3.0; glucose-2.5; sodium chloride-5.0; dipotassium phosphate-2.5 and agar-10. Minimal inhibitory concentration (MIC) of DBNPA was previously determined by microdiluiton broth. DBNPA was incorporated onto medium to obtain final concentrations equivalent to 128 µg/mL = MIC; 64 µg/mL = ½ x MIC and 32 µg/mL = ¼ x MIC. Plates without DBNPA were used as controls. Standardized suspensions of each strain (10^7 CFU/mL) were inoculated with a sterile toothpick through a thin layer of medium. The plates were incubated for 48 hours at 37 °C. Then, the zones of growth at the interface between the agar and the bottom of the plate were mesured in milimetres. DBNPA at 128 µg/mL Inhibited the twitching motility of all *P. aeruginosa* strains. When compared to control, the DBNPA sub-inhibitory concentrations (64 and 32 µg/mL) were able to reduce by half the growth zone *P. aeruginosa*. Sub-inhibitory concentrations of DBNPA affect directly the *P. aeruginosa* twitching motility However, future investigations are necessary to explore the action mechanisms of DBNPA on *P. aeruginosa* twitching motility.

Keywords: *Pseudomonas aeruginosa*, twitching motility, DBNPA.

Development agency: Universidade Federal de Pernambuco (UFPE); Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES)