

**TITLE:** POLYAMINE TRANSPORTER D, POTD, IS IMPORTANT FOR BIOFILM FORMATION BY *KLEBSIELLA PNEUMONIAE*

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**ABSTRACT:**

*Klebsiella pneumoniae* (*K.pneumoniae*) is a gram-negative, encapsulated bacterium, being an important etiological agent involved in nosocomial infections and acquired by the community, reaching newborns, elderly and immunocompromised individuals more frequently. The bacterium uses an intercellular communication mechanism called *quorum sensing* to produce biofilms, which are microbial communities formed by one or more species of bacteria and are involved at a higher level of antimicrobial resistance, this communication is guided mainly by the production of type II self-inducing molecules (AI-2). Some studies have described the influence of polyamines that are molecules necessary for the growth and development of all cells and their transporters on the formation of biofilm by different microorganisms. In this work, we seek to evaluate the formation of biofilm, on abiotic surface, through a 96-well microplate biofilm assay comparing the wild type of strain (MP103) and mutant *potD*(4378 *potD*) strain, which were incubated in tryptic soy broth (TSB) medium for 24 and 48 hours, each bacterium was grown in 22 wells, and the results represent the average of optical density values after staining with violet crystal elude in acetic acid 30%. Our results showed difference on biofilm formed between the two strains, it was observed that the longer we keep the bacteria, the greater the difference in biofilm formation is. It is possible to confirm that the removal of the *potD* gene led to a decrease in biofilm formation when compared to wild type bacteria which support our hypothesis that the polyamine transporters are important for the bacteria to form biofilm. Additionally, this difference is greater when the biofilm is kept for longer time, it is described in the literature that the culture needs time for the biofilm become mature which is also observed in our work. Here, we showed that the polyamine transporter D is important for biofilm formation in *Klebsiella pneumoniae*.

**Keywords:** Biofilm, *K.pneumoniae*, polyamine, PotD

**Development Agency:** Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) 2019/23566-6 and 2021/01211-1.