

TITLE: PRESENCE OF FIMBRIAL GENES IN CLINICAL ISOLATES OF *Providencia stuartii*

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ABSTRACT:

Providencia stuartii is most responsible for infections among species of the genus *Providencia*. This microorganism is an opportunistic pathogen, mainly causing urinary tract infections (UTI) in addition to other types of infections, such as those related to devices. Despite being a known opportunistic pathogen, little is known to date about the virulence factors that help in its pathogenesis, such as the expression of fimbriae. Fimbriae are appendages that allow the fixation of microorganisms on different surfaces, contributing to the infection process. Thus, the present study aimed to determine genes related to the expression of fimbriae from 45 clinical isolates of *P. stuartii* from a hospital in northern Paraná. For the identification of genes related to the expression of fimbriae in *P. stuartii*, the sequenced genome of the isolate ATCC 33672 was submitted to analysis to identify virulence factors in the *Virulence Factor of Pathogenic Bacteria* (VFDB) platform. The *fimA* and *mrkA* genes were identified and these genes were searched for in the analyzed isolates. To verify the presence of these genes, the polymerase chain reaction (PCR) was performed. The results obtained showed that 100% of the isolates had the *fimA* and *mrkA* genes. The *fimA* gene encodes a type 1 fimbriae subunit, responsible for enabling initial adhesion to host cells, while the *mrkA* gene encodes a type 3 fimbria subunit, which enables adhesion and biofilm formation on abiotic surfaces. It can be concluded from the results obtained that the studied *P. stuartii* isolates have genes encoding fimbriae that enable the colonization of abiotic surfaces such as catheters, as genes that enable initial adhesion with the host cell, contributing to its pathogenesis and helping during the infection process.

Keywords: Fimbrial genes; Hospital infection; Public health; Virulence factors

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