

TITLE: Genotypic characterization of the virulence factors of *Proteus mirabilis* isolated from patients with urinary tract infection in the municipality of Londrina

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ABSTRACT:

Urinary tract infection (UTI) is among the most common infections in humans and usually occurs through the rise of microorganisms through the urethra, which can reach the bladder and kidneys. *Proteus mirabilis* accounts for 1% to 2% of urinary infections in healthy women (community-acquired) and 5% of nosocomial infections, and is associated with 20% to 45% of cases in catheterized patients. In order for the infection to establish itself, bacteria need to colonize the urinary epithelium, evade the immune system and multiply in significant numbers and it is through virulence factors that the pathogens can adapt to the environment of the host and ensure the success of the infection. Thus, the pathogenesis of *P. mirabilis* is related to the ability of the species to express its virulence factors. The objective of this study was to investigate the prevalence of the main virulence factors of *P. mirabilis* in 184 strains isolated from urine of patients attended at the Basic Health Units of Londrina - PR, obtained between December 2016 and July 2017. Through the polymerase chain reaction (PCR) technique, 8 genes (*mrpA*, *pmfA*, *atfA*, *ucaA*, *hpmA*, *ptA*, *zapA* and *ireA*) were screened for encoding several virulence factors, such as fimbrial adhesins, cytotoxins, proteases and iron uptake systems. After PCR, the amplified product was submitted to agarose gel electrophoresis and visualized in a transilluminator with ultraviolet light. The *mrpA*, *pmfA*, *atfA*, *hpmA*, *ptA*, *zapA* and *ireA* genes were found in 100% of strains, whereas the *ucaA* gene was positive in 81.52% of the strains surveyed. As it turns out, *P. mirabilis* exhibits a high ability to express all its virulence factors and consequently uses them in the infection processes. It is of great importance that the pathogenicity mechanisms used by the microorganisms be elucidated in order to find alternatives that can be used as possible therapeutic targets.

Keywords: *Proteus mirabilis*, Urinary tract infection (UTI), virulence factors, polymerase chain reaction (PCR).

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