

**TITLE:** COMPARATIVE ANALYSIS OF THE PREVALENCE OF FIMBRIAL GENES *mrpA*, *pmfA*, *ucaA* AND *atfA* IN *Proteus mirabilis* ISOLATED FROM URINARY TRACT INFECTIONS AND POULTRY, BEEF AND PORK MEAT

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**ABSTRACT:**

The presence of bacteria that have potential for virulence in meat products poses serious health risks to consumers. Meat contamination can occur during and after slaughter due to the presence of bacteria from the microbiota or in equipment in the meat and butcher industries. Some bacteria may have virulence factors, favoring infections in humans, such as *Proteus mirabilis*. *P. mirabilis* is an enterobacteria present in the environment and in human and other animal microbiota. However, this species is considered an opportunistic pathogen, being an important pathogen of urinary tract infections (UTIs). Thus, this study aimed to evaluate the presence of fimbriae genes and their prevalence in *P. mirabilis* strains isolated from chicken, beef, pork and community-acquired urinary tract infections (CAUTI), belonging to a laboratory collection of Bacteriology at the State University of Londrina (LABAC-UEL). For this, 583 isolates (200 from chicken meat, 83 from pork meat, 100 from beef meat and 200 from CAUTI) were submitted to the search for the fimbrial genes *pmfA*, *ucaA*, *mrpA* and *atfA* using the Polymerase Chain Reaction (PCR) technique. The results show that the *mrpA* and *pmfA* genes were detected in 100% of the isolates, regardless of the source of isolation, while the *ucaA* gene was present in 170 isolates (85%) of CAUTI, 106 (53%) of meat from chicken, 49 (49%) from beef and 39 (47%) from pork. The *atfA* gene was identified in 198 (99%) isolates from CAUTI, 199 (99.5%) from chicken meat, 42 (42%) from beef and 37 (44.6%) from pork. Both the beef and CAUTI strains had fimbrial genes known to contribute to UTIs in humans. The statistical analysis showed that the CAUTI-causing *P. mirabilis* have a higher prevalence of *ucaA* (OR: 2.55; CI:1.9–3.42) compared to meat isolates, whereas the *atfA* gene had a higher prevalence in CAUTI isolates (OR :6.42; CI: 3.38–12.16) and chicken meat, compared with isolates from beef and pork (OR: 12.51; CI: 5.88–26.65). It is concluded that the fimbrial genes *mrpA*, *pmfA*, *ucaA* and *atfA* can be found both in isolated meat strains and in CAUTI, highlighting the pathogenic and zoonotic potential of isolated meat strains to human health.

**Keywords:** Foodborn, Patogenicity, *Proteus mirabilis*, Virulence factors, Zoonotic risk

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