

**TITLE:** COMPARATIVE ANALYSIS OF THE PREVALENCE OF GENES RESPONSIBLE FOR EXPRESSING HEMOLYSINS, PROTEASES AND SIDEROPHORES IN *Proteus mirabilis* ISOLATED FROM URINARY TRACT INFECTIONS AND CHICKEN, BEEF AND PORK MEAT

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**ABSTRACT:**

Improper handling of meat during slaughter can be a source of frequent cross contamination, posing a threat to consumer health. Bacteria belonging to the intestinal microbiota of animals, such as *Proteus mirabilis*, despite being considered commensals, can pose great risks to the population through their consumption in meat. The ability of these bacteria to adapt to the environment is due to the presence of virulence genes such as hemolysins, proteases and siderophores. *P. mirabilis* is a Gram-negative enterobacterium, considered an opportunistic pathogen, involved mainly in urinary tract infections (UTIs). Thus, this study aimed to detect genes encoding hemolysins, proteases and siderophores and their prevalence in *P. mirabilis* strains isolated from chicken, beef, pork and community-acquired urinary tract infections (CAUTI), belonging to a bacteriological collection of the Bacteriology Laboratory of the State University of Londrina (LABAC-UEL). For this, 583 isolates (200 from CAUTI, 200 from chicken, 83 from pork and 100 from beef) were submitted to *zapA*, *ptA*, *hpmA*, *hlyA* and *ireA* gene search, using the Polymerase Chain Reaction technique (PCR). The presence of the *zapA* gene was detected in all 200 (100%) CAUTI isolates, in 198 (99%) chicken meat isolates, 99 (99%) from beef and in 83 (100%) from pork meat. The *ptA* gene was detected in 199 (99.5%) CAUTI isolates, in 197 (98.5%) from chicken meat, 95 (95%) from beef and 80 (96.4%) from pork meat. The *hpmA* gene was detected in 199 (99.5%) CAUTI isolates, 196 (98%) from chicken meat, 97 (97%) from beef and 82 (98.8%) from pork while the *ireA* gene was detected 200 (100%) from CAUTI, 119 (59.5%) from chicken, 59 (59%) from beef and 50 (62.2%) from pork. Regardless of the source, *hlyA* was not detected in any isolate. Statistical analysis of *P. mirabilis* causing CAUTI also showed a high prevalence of the *ireA* gene (OR: 358.64; CI: 0 – infinity). From these data we can conclude that there is a potential risk, both pathogenic and zoonotic, of strains isolated from meat, which represents a risk to human health and especially to consumers.

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

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