

TITLE: GENOTYPIC PROFILE OF VIRULENCE OF *Proteus mirabilis* ISOLATED IN PURE CULTURE OF CELLULITIS IN BROILERS: POTENTIAL ETIOLOGICAL AGENT

AUTHORS: SANCHES, M.S.; BAPTISTA, A.A.S.; SOUZA, M.; MENCK-COSTA, M.F.; GUIDONE, G.H.M.; WALDRICH, T.L.; OLIVEIRA, W.D.; RIBELATO, E. V.; ROCHA, S.P.D

INSTITUTION: UNIVERSIDADE ESTADUAL DE LONDRINA, LONDRINA, PR (RODOVIA CELSO GARCIA CID, 445 Km, CEP 86057-970, LONDRINA – PR, BRAZIL)

ABSTRACT:

Avian cellulitis is a disease characterized by inflammation of the subcutaneous tissue, mainly in the abdominal region and thighs, causing the total or partial condemnation of chicken carcasses that have this inflammatory character. The *Escherichia coli* species is considered the main etiological agent of the disease, but other species can also be recovered from these lesions. *Proteus mirabilis* is an enterobacteria responsible for causing several infections in humans, with urinary tract infections being the most frequent, but no association of this species with cellulitis in broilers was performed. The present study aimed to isolate *E. coli* from cellulitis lesions in chicken carcasses in a slaughterhouse in southern Brazil, but the most recovered species in pure culture was *P. mirabilis*. Thus, the present study aimed to evaluate the virulence profile of 25 *P. mirabilis* isolated from cellulitis lesions in chicken carcasses, in which only one isolate from each carcass with cellulitis was selected. All isolates were submitted to the Polymerase Chain Reaction (PCR) assay to evaluate the presence of the *mrpA*, *pmfA*, *atfA*, *ucaA* (fimbriae), *zapA* and *ptA* (proteases), *hpmA* and *hlyA* (hemolysins) and *ireA* (siderophore receptors) associated with the virulence of *P. mirabilis* and *ompT* (protease), *hlyF* (hemolysin), *iss* (serum resistance), *iutA* and *iroN* (siderophore receptors) associated with virulence of avian pathogenic *Escherichia coli* (APEC). The *mrpA*, *pmfA*, *atfA*, *zapA*, *ptA*, *hpmA*, *ireA* genes were found in 25 (100%) isolates, whereas *ucaA* was detected in only 12 (48%) and *hlyA* in none isolates. The *ompT*, *hlyF*, *iss*, *iutA* and *iroN* plasmid genes commonly associated with virulence of APEC were not detected in any isolate. We detected a variety of genes encoding virulence factors that may be related to the pathogenesis of cellulitis in broilers, as well as fimbriae that may contribute to adhesion to host cells, proteases that degrade structural proteins and the immune system, hemolysins that are toxic to eukaryotic cells and erythrocytes and siderophores receptors that are extremely important in the acquisition of host iron. It is concluded with the present study that *P. mirabilis* isolated from cellulitis in chicken carcasses have a diversity of genes that encode virulence factors. Therefore, more studies need to be performed to evaluate the ability of *P. mirabilis* to cause cellulitis *in vivo* and which of these genes may contribute to the disease in broilers.

Keywords: avian cellulitis, virulence factors, chicken carcasses, pathogenicity

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