



### Examining the abundance of virulence genes in *Escherichia coli* Isolates obtained from ostriches

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**Objectives:** Colibacillosis refers to any localized or systemic infection caused by pathogenic *Escherichia coli* in poultry. It includes colisepticemia, hemorrhagic septicemia, coligranuloma, air sac disease (chronic respiratory disease), swollen head syndrome, colibacillosis of reproductive organs, coliform cellulitis, peritonitis, salpingitis, orchitis, osteomyelitis, yolk sac infection, and enteritis. This pathogen possesses virulence factors such as adhesins mediated by fimbriae and flagella, including P fimbriae (*papC*), as well as other factors like aerobactin (*iucD*), iron uptake systems (*irp2*), serum survival proteins (*iss*), vacuolating autotransporter toxin (*vat*), colicin V proteins (*cva/cvi*), temperature-sensitive hemagglutinin (*tsh*), and enterotoxin (*astA*). All these virulence factors exacerbate the severity of the disease and create favorable conditions for the pathogen's survival outside the intestinal environment.

**Materials & Methods:** A total of 129 bacterial isolates were collected from ostriches, comprising 45 commensal strains and 84 pathogenic strains. In this study, the boiling method was used for bacterial genome extraction. All bacterial strains were evaluated for the presence of virulence genes (*astA*, *vat*, *papC*, *irp2*, *iss*, *iucD*, *tsh*, and *cva/cvi*) using multiplex PCR.

**Results & Conclusion:** More than half of the isolates lacked virulence-associated genes. Multiplex PCR results revealed that the *irp2* gene was significantly more prevalent in pathogenic *E. coli* compared to commensal strains ( $p < 0.05$ ). However, this trend was not observed for the other genes. Based on the results of this study, more comprehensive research is needed to identify the content of virulence genes in *Escherichia coli* isolates from ostrich origins and to determine the significance of these virulence genes in the pathogenicity of these isolates.

**keywords:** *Escherichia coli*, APEC, Virulence factors, Ostrich