

Paixão A C, AC Ferreira, M Fontes, P Themudo, T Albuquerque, MC Soares, M Fevereiro, L Martins, MI Corrêa de Sá. Detection of virulence-associated genes in pathogenic and commensal avian *Escherichia coli* isolates. *Poultry Science*. 2016. DOI: 10.3382/ps/pew087

Abstract:

Poultry colibacillosis due to Avian Pathogenic *Escherichia coli* (APEC) is responsible for several extra-intestinal pathological conditions, leading to serious economic damage in poultry production. The most commonly associated pathologies are airsacculitis, colisepticemia, and cellulitis in broiler chickens, and salpingitis and peritonitis in broiler breeders. In this work a total of 66 strains isolated from dead broiler breeders affected with colibacillosis and 61 strains from healthy broilers were studied. Strains from broiler breeders were typified with serogroups O2, O18, and O78, which are mainly associated with disease. The serogroup O78 was the most prevalent (58%). All the strains were checked for the presence of 11 virulence genes: 1) arginine succinyltransferase A (*astA*); ii) *E. coli* hemeutilization protein A (*chuA*); iii) colicin V A/B (*cvaA/B*); iv) fimbriae mannose-binding type 1 (*fimC*); v) ferric yersiniabactin uptake A (*fyuA*); vi) iron-repressible high-molecular-weight proteins 2 (*irp2*); vii) increased serum survival (*iss*); viii) iron-uptake systems of *E. coli* D (*iucD*); ix) pielonefritis associated to pili C (*papC*); x) temperature sensitive haemagglutinin (*tsh*), and xi) vacuolating autotransporter toxin (*vat*), by Multiplex-PCR. The results showed that all genes are present in both commensal and pathogenic *E. coli* strains. The iron uptake-related genes and the serum survival gene were more prevalent among APEC. The adhesin genes, except *tsh*, and the toxin genes, except *astA*, were also more prevalent among APEC isolates. Except for *astA* and *tsh*, APEC strains harbored the majority of the virulence-associated genes studied and *fimC* was the most prevalent gene, detected in 96.97 and 88.52% of APEC and AFEC strains, respectively. Possession of more than one iron transport system seems to play an important role on APEC survival.