

Avian Pathogenic Escherichia coli (APEC) in Palestine: Characterization of Virulence Factors and Antibiotic Resistance Profile ppu pdf.pdf



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Escherichia coli bacterium is common to many environments and there are over 150 different strains. Avian pathogenic E. coli (APEC) strains cause diseases in birds at various ages. The introduction of such strains to chicken respiratory tract causes invasive infections, collectively known as colibacillosis. It .can cause extensive mortality in poultry flocks leading to great economic losses

Recent reports showed that the APEC pathogenicity is associated with certain virulence genes (papC, astA, vat, and irp2) are located within the bacterial genome and/or their CoIV plasmids (tsh, iucD, iss, and cvi). Identification and characterization of these genes are essential to implementing efficient disease control and prevention systems. The aim of this study is to identify the virulence associated .genes and the antibiotic resistance profiles of APEC strains in Palestine

Internal organ samples from 83 infected flocks were collected and tested for presence of the mentioned virulence genes using an adapted and improved multiplex PCR protocol. The resistance of the isolated

.strains to 10 commonly used antibiotics in Palestine was analyzed using the disc diffusion method

The multiplex PCR of the tested samples revealed a high prevalence of the following genes: iss and cvi 100%, astA 98.48% and iucD 78.79%. The genes vat and papC have a prevalence of 34.85% and 31.81%, respectively. To a lesser extent irp2 19.70% and tsh 10.61% were identified. The study of antibiotic susceptibility profiles showed high resistance levels against Tetracycline 100%, Ampicillin 83.33%, Amoxicillin 83.33%, Kanamycin 80.3%, Ciprofloxacin 72.72% and Neomycin 69.70%, while the .lowest resistance levels were against Nitrofurantoin 18.18% and Cephalexin 12.12%

The improved multiplex PCR has proven to be a useful and rapid assay to identify virulence factor profiles of APEC. In Palestine, the indiscriminate use of antibiotics should be avoided. It may increase the risk of development of drug-resistant E. coli strains that constitute a human risk due to zoonose potential reservoir of Extended-spectrum b-lactamases resistance genes. Therefore, programs are recommended to increase farmer's awareness about the devastating effects of antibiotic misuse. In addition, the authorities must take a responsible role through imposition a set of regulations to ensure .safe poultry products

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