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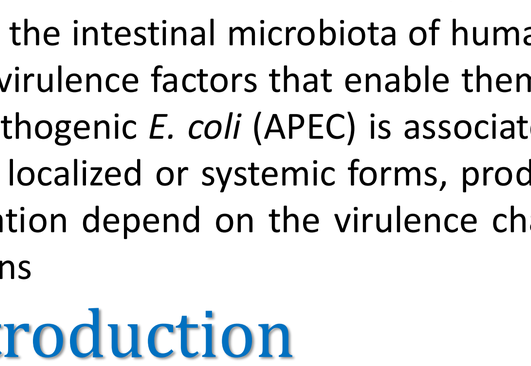
AVIAN COLIBACILOSIS AT POULTRY

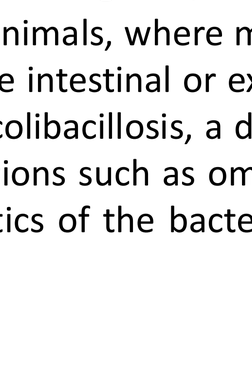
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Abstract: *Escherichia coli* (*E. coli*) is a Gram-negative, facultatively anaerobic bacterium belonging to the family *Enterobacteriaceae*. It is commonly found in the intestinal microbiota of humans and animals, where most strains coexist with the host without causing disease. However, certain strains possess specific virulence factors that enable them to cause intestinal or extraintestinal infections In poultry, *E. coli* is of considerable veterinary importance because avian pathogenic *E. coli* (APEC) is associated with colibacillosis, a disease that can affect birds of different ages and production categories. The infection may occur in localized or systemic forms, producing lesions such as omphalitis, pericarditis, perihepatitis, aerosacculitis and septicemia. The severity and clinical presentation depend on the virulence characteristics of the bacterial strain, the age and immune status of the host, and environmental and management conditions

• Introduction

Avian pathogenic *Escherichia coli* (APEC) represents a significant challenge for the poultry industry because of its widespread distribution and its ability to affect the health and productivity of commercial flocks. These strains belong to the group of extraintestinal pathogenic *E. coli* (ExPEC), which includes other pathotypes associated with infections outside the intestinal tract. Unlike infections caused by enteric pathotypes, APEC-associated disease is primarily characterized by the involvement of extraintestinal tissues and may develop under a variety of epidemiological and environmental conditions





• Material and method

The bird examined in this study originated from a household poultry flock located in Dolj County, Romania, where progressive mortality among chickens had been reported. According to the information provided, the birds presented respiratory problems. However, no additional clinical or epidemiological data were available at the time of examination.

A post-mortem examination was performed at the Forensic Medicine Unit of the Faculty of Veterinary Medicine, Timișoara, following the standard necropsy procedure for poultry. The examination aimed to assess the bird’s pathological condition and identify any lesions potentially associated with the reported respiratory signs.
Following necropsy, samples were collected from the pharyngeal region and the lungs for bacteriological examination. A sterile pharyngeal swab was used to collect the sample from the pharyngeal region, while the lung sample was collected separately. The samples were subsequently processed and inoculated onto culture media to investigate bacterial growth and identify potential bacterial agents associated with the respiratory condition.

Following sample collection, the pharyngeal and lung samples were inoculated onto Eosin Methylene Blue (EMB) agar for bacteriological examination. After incubation under the laboratory conditions used, bacterial growth was assessed based on colony morphology and appearance. Colonies exhibiting a characteristic metallic green sheen were observed, suggesting the presence of *Escherichia coli*. However, further biochemical or molecular tests are required to confirm the bacterial identification.

Acknowledgement: I would like to thank the farmer who brought the birds to us, as well as my colleagues who helped me carry out the experiment.

• Results and discussions

The gross pathological findings observed in the present case are consistent with those described in previous studies of avian colibacillosis. Apostolakos et al. (2021) investigated the occurrence of colibacillosis in broiler chickens and its relationship with the population structure and molecular characteristics of avian pathogenic Escherichia coli (APEC). Perihepatitis and pericarditis are recognized as characteristic lesions associated with systemic colibacillosis.
Hepatomegaly and splenomegaly were additional pathological findings in the examined bird. Khairullah et al. (2024) describe the systemic manifestations and pathological consequences associated with APEC infections in poultry.

The bacteriological examination revealed colonies with a metallic green sheen on Eosin Methylene Blue agar. This characteristic appearance is commonly associated with *Escherichia coli* and is related to its ability to ferment lactose strongly on this medium.

The progressive mortality reported in the household poultry flock emphasizes the importance of investigating suspected outbreaks of colibacillosis. APEC infections may cause substantial economic losses through mortality, reduced productivity, and costs associated with diagnosis and disease management. However, the present investigation involved a single examined bird, and detailed epidemiological information and diagnostic results from additional birds were unavailable. Consequently, although the pathological findings and presumptive bacterial isolation are compatible with avian colibacillosis, the contribution of *E. coli* to mortality throughout the flock cannot be definitively established. Further examination of affected birds and confirmatory laboratory testing would help clarify the cause of the reported mortality (Khairullah et al., 2024).

• Conclusions

The present case highlights the importance of combining post-mortem examination with bacteriological investigation in poultry presenting with respiratory disorders and increased mortality. The main pathological findings included bronchopneumonia, hepatomegaly, splenomegaly, perihepatitis and pericarditis. These lesions were compatible with those commonly associated with avian colibacillosis and suggested possible systemic involvement.

Bacteriological examination on Eosin Methylene Blue agar revealed colonies with a characteristic metallic green sheen, consistent with the presumptive identification of *Escherichia coli*. Further investigations are required to characterize the isolated strain and determine whether it possesses virulence-associated characteristics consistent with avian pathogenic *E. coli*.

In conclusion, the combination of pathological findings and bacteriological observations supports the suspicion of avian colibacillosis.





