

# Molecular Epidemiology of *Escherichia coli* in Organic Egg Layer Flocks

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## Abstract

Clinical *E. coli* infection in poultry (coli bacillosis) is mostly caused by strains of particular serotypes, often in possession of large plasmids, representing genotypic clones. However, it is unknown whether these clones are present throughout life or introduced prior to clinical disease. The aim was to study *E. coli* population profiles of plasmids, colicins, antibiotic resistance and serology in 6 organic flocks.

Swabs were taken from trachea and cloaca from 20-30 randomly selected birds per flock at 18 weeks (pre-lay), 23-25 weeks (point of lay) and in one flock also at 44 weeks (established layers) in a repeated cross sectional study design.

*E. coli* was identified in 98% of cloacal swabs and in 45% of tracheal swabs. Presence of *E. coli* depended on age and flock. There were no obvious links between antibiotic resistance and serotypes and plasmid types. In all 22 serotypes were identified including those previously associated with outbreaks of coli bacillosis, while 53% of all detected *E. coli* were non-typable. Antibiotics resistance was detected for tetracycline and ampicillin. Resistance to tetracycline was mainly associated with increasing age, presence of colicin V and other plasmids, and an effect of flock.

These results were surprising given that they were isolated from an organic production system. This base line study may give clues to understanding the dynamics of the bacterial diversity and occurrence of potential pathogenicity.

The full paper will most likely be submitted to Preventive Veterinary Medicine or to Avian Pathology.