

Impact of the Canadian Delmarva (DMV/1639) Infectious Bronchitis Virus (IBV) on Egg Production in Layers

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Infectious bronchitis virus (IBV) is a coronavirus that infects chickens leading to economic losses globally. Although the disease caused by IBV is known as infectious bronchitis (IB), the virus also replicates and induces lesions in renal, reproductive, and gastrointestinal systems of chickens. Recently, variant IBVs, predominantly DMV/1639 strain, have been isolated from outbreaks of poor reproductive performance in the laying flocks in Eastern Canada. We hypothesized that experimental infection with DMV/1639 variant causes gross and/or microscopic lesions in the reproductive organs leading to egg production and quality issues. We infected specific pathogen free layers (29 weeks) maintaining an uninfected control group. At 5 days post-infection (dpi), egg production dropped to 40% and lowered egg production continued till the end of the experiment (10 dpi). Ovarian regression and atrophied oviduct were observed in some of the infected layers. Histological changes were also noted in the uterus of infected chickens. Infection induced significant levels of Anti-IBV antibodies both in serum and locally in the reproductive tract washes ($P < 0.05$). Higher level of IFN- γ (antiviral cytokine) was also detected in the reproductive tract washes. Immunostaining for KUL01+ macrophages and CD4+ and CD8+ T-cell subsets showed significantly increased recruitment of macrophages and CD8+ T-cells in the reproductive tract mucosa of the infected birds ($P < 0.05$).

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