ABSTRAK

DETEKSI MOLEKULER DAN ISOLASI VIRUS *Newcastle Disease* (ND) PADA AYAM LAYER DENGAN KASUS KEMATIAN TINGGI DI DESA MOYUDAN, SLEMAN

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Newcastle Disease (ND) disebabkan oleh *Avian Paramyxovirus*-1 (APMV-1), adalah salah satu penyakit menular pada unggas, terutama ayam layer. Wabah ND menyebabkan kerugian ekonomi yang signifikan, ditandai dengan kematian ayam secara mendadak dalam jumlah besar. Penelitian ini bertujuan untuk mengisolasi dan mengidentifikasi agen penyebab kematian tinggi ayam layer pada suatu Peternakan di Desa Moyudan, Sleman. Dua ekor ayam layer bergejala tortikolis dan gangguan pernapasan diberi kode Ayam A dan Ayam B, digunakan untuk penelitian ini. Ayam dinekropsi, otak, lien, pulmo, dan trakea diambil untuk dideteksi secara molekuler menggunakan *two-step reverse transcriptase-polymerase chain reaction* (RT-PCR). Isolasi dilakukan dengan menginokulasikan pool organ (otak, lien, dan pulmo) serta trakea dalam telur ayam berembrio (TAB) umur 9 hari, cairan alantois kemudian dipanen dan diuji Hemagglutinasi-Agglutinasi (HA) serta RT-PCR. Hasil penelitian ditemukan perubahan makroskopis yang teramati pada sampel ayam layer akibat infeksi ND berupa kongesti otak dan ruptur kuning telur. Deteksi RT-PCR didapati sampel ayam A positif teramplifikasi gen F2 virus ND, sedangkan sampel B negatif. Isolasi pada TAB menunjukkan adanya gangguan pada pertumbuhan embrio. Hasil dari cairan alantois diperoleh uji HA diperoleh keseluruhan seronegatif namun RT-PCR menunjukkan adanya pertumbuhan pada isolat kedua ayam.

Kata Kunci: *Newcastle Disease*, Ayam layer, RT-PCR, Hemagglutinasi-Agglutinasi (HA).

ABSTRACT

MOLECULAR DETECTION AND ISOLATION OF Newcastle Disease (ND) VIRUS WITH CASES OF HIGH MORTALITY IN LAYER HENS IN MOYUDAN VILLAGE, SLEMAN

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Newcastle Disease (ND), caused by *Avian Paramyxovirus*-1 (APMV-1), is a highly infectious viral infection impacting poultry, especially laying hens. ND outbreaks result in significant economic losses in the poultry industry, marked by sudden and extensive chicken mortality. This study focuses on isolating and identifying the causative agent behind elevated mortality rates observed in laying hens at a Moyudan Village farm in Sleman. Two symptomatic laying hens, labeled Chicken A & Chicken B, exhibiting torticollis and nasal discharge, were chosen for this study. Necropsies were conducted, brain, lung, spleen, and trachea were collected and pooled for molecular detection using a two-step reverse transcriptase-polymerase chain reaction (RT-PCR). Isolation attempts were made by inoculating pooled organ (brain, lung and spleen) and trachea into 9-day-old embryonated chicken eggs (ECE). Allantoic fluid then harvested, changes in embryo were observed followed by hemagglutination (HA) testing and RT-PCR. Result found macroscopic changes in ND-infected chicken samples included petechial hemorrhage in the proventriculus, moderate brain congestion and egg yolk rupture. Molecular detection using RT-PCR confirmed that Chicken A tested positive for the ND virus, amplifying the F2 gene, while Chicken B tested negative. Isolation on ECE revealed interference with embryo growth, though HA test results from allantoic fluid were negative while RT-PCR showed positive result on both chicken.

Key Word: Newcastle Disease, Laying Hens, RT-PCR, Haemagglutination Agglutination (HA).