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Molecular and Serological Diagnosis of Newcastle and Ornithobacterium rhinotracheale Broiler in Chicken in Fars Province, Iran

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Abstract : Respiratory diseases are the most important problems in the country’s poultry industry, particularly when it comes to broiler flocks. Ornithobacterium rhinotracheale (ORT) is a species that causes poor performance in growth rate, egg production, and mortality. This pathogen causes a respiratory infection including pulmonary alveolar inflammation, and pneumonia of birds throughout the world. Newcastle disease (ND) is a highly contagious disease in poultry, and also, it causes considerable losses to the poultry industry. The aim of this study was to evaluate the simultaneous occurrence of ORT and ND and NDV isolation by inoculation in embryonated eggs and confirmed by RT-PCR in broiler chicken flocks in Fars province. In this study, 318 blood and 85 tissue samples (brain, trachea, liver, and cecal tonsils) were collected from 15 broiler chicken farms. Survey serum antibody titers against ORT by using a commercial enzyme-linked immunosorbent assay (ELISA) kit performed. Evaluation of antibody titer against ND virus is performed by hemagglutination inhibition test. Virus isolation with chick embryo eggs 9-11 and RT-PCR method were carried out. A total of 318 serum samples, 135 samples (42.5%) were positive for antibodies to ORT and titer of HI antibodies against NDV in 122 serum samples (38/4%) were 7-10 (log2) and 61 serum samples (19/2%) had occurrence antibody titer against Newcastle virus and ORT. Results of the present study indicated that 20 tissue samples were positive in embryonated egg and in rapid hemagglutination (HA) test. HI test with specific ND positive serum confirmed that 6 of 20 samples. PCR confirmed that all six samples were positive and PCR products of samples indicated 535-base pair fragments in electrophrosis. Due to the great economic importance of these two diseases in the poultry industry, it is necessary to design and implement a comprehensive plan for prevention and control of these diseases.

Keywords : ELISA, Ornithobacterium rhinotracheale, newcastle disease, seroprevalence
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