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Molecular identification of the common viral respiratory viruses in backyard chickens in Basrah, Southern Iraq

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Abstract

Many viruses can infect different types of birds, with poultry being the most susceptible. These viral diseases have a direct negative impact on the poultry industry, with significant economic losses. This study examined a group of the most important viruses that infect backyard chickens in 2 specific areas of Basrah Governorate, south of Iraq. The study analyzed avian influenza viruses (AIVs), Newcastle disease virus (NDV), and infectious bronchitis virus (IBV). Two hundred and ninety oropharyngeal swabs, 150 from Abu Al-Khasib and 140 from Shatt Al-Arab regions in the Basrah governorate, were obtained from backyard chickens with clear respiratory signs. The samples were subjected to viral RNA extraction, and the viral nucleic acids were detected using a reverse transcriptase polymerase chain reaction technique. The overall rate of viral infections was 74.8%, which varied depending on the type of virus: 15.8%, 31.3%, and 27.5% for AIV, NDV, and IBV, respectively. The NDV and IBV had much higher infection rates than that of AIV. In addition, the prevalence of AIV in the Shatt Al Arab district was significantly higher than in the Abul Khasib district. Moreover, there were no significant differences between the NDV and the IBV distributions in either of the targeted regions in this study.

Keywords: Newcastle disease; influenza in birds; infectious bronchitis virus; chicken; reverse transcriptase polymerase chain reaction

Introduction

Poultry can be infected with multiple diseases that cause considerable economic losses globally [1]. Respiratory diseases can arise from infections caused by different pathogens, including viruses, bacteria, and fungi. Among the key viral diseases that have significant importance are infectious bronchitis (IB), avian influenza (AI), and Newcastle disease (ND) [2].

AI, which is commonly known as “bird flu,” is a respiratory illness found in birds and is caused by the influenza virus type A. Although wild birds, such as ducks, shorebirds, and gulls, can carry and transmit these viruses, they may not display any visible signs of infection. On the other hand, AI has the potential to cause fatalities among domestic poultry, particularly chickens and turkeys, and occasionally in ducks and geese [3]. Avian influenza viruses (AIVs) belong to the genus *Influenzavirus A* and the family *Orthomyxoviridae*. The virus genome con-