Serotyping of Fowl Adenoviruses Associated with Inclusion Body Hepatitis (IBH) in Broiler Chickens in North-Western and Central Provinces of Sri Lanka

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Fowl adenoviruses (FAdVs) belong to the family *Adenoviridae*. There are five different FAdV species (FAdV A-E) and 12 serotypes. Serotyping is based on the loop 1 region of the hexon gene. FAdV-D (serotypes 2, 3, 9, and 11) and FAdV-E (serotypes 6, 7, 8a, and 8b) cause Inclusion Body Hepatitis (IBH) which is an economically important acute disease mainly affecting 3-7 weeks old broiler chickens. The objective of this study was to identify the circulating FAdV serotype/s in commercial broiler farms in North-Western and Central Provinces of Sri Lanka. One dead broiler chicken manifesting IBH clinical signs (i.e. lethargy, huddling, ruffled feathers, depression, inappetence and adopting a crouching position) was collected from 17 different flocks (14 from North-Western and 3 from Central Provinces) were used for the study. Necropsy of dead broilers revealed liver lesions, i.e., hepatomegaly, pale yellow discolouration with necrotic foci, and multifocal petechial haemorrhages. Histopathology of liver samples (11 from North-Western and 3 from Central Provinces) revealed diffuse, large, basophilic, intranuclear inclusion bodies in hepatocytes with hepatocellular degeneration and necrosis. A conventional Polymerase Chain Reaction (PCR) was performed for the liver samples with histopathological lesions, targeting 897 bp fragment of the FAdV hexon gene. PCR revealed 54.55% and 100% positivity in North-Western and Central Provinces respectively. Resultant PCR products were sequenced and analysed by BLASTN against GenBank sequences. Analysis revealed that the liver samples obtained from North-Western Province had serotypes 8b and 11, and Central Province had serotype 8b. Further, our analysis revealed both FAdV-D and FAdV-E were circulating in North-Western Province. However, only FAdV-E was detected in the Central Province. These findings are important for vaccination strategies, emphasizing the need to match circulating serotypes. Accordingly, the serotype 4 FAdV vaccine currently used in Sri Lanka may not be effective in controlling IBH.

Keywords: Broiler, Fowl adenovirus, Gene sequencing, Inclusion body hepatitis, Serotype

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