

Identification and Virulence Characterization of Fowl Adenoviruses in the Republic of Korea

Tae-Hyun Lim, Hyun-Jeong Lee, Dong-Hun Lee, Yu-Na Lee, Jae-Keun Park, Ha-Na Youn, Myung-Seob Kim, Ho-Sik Youn, Joong-Bok Lee, Seung-Yong Park, In-Soo Choi, and Chang-Seon Song
Contact Address: songcs@konkuk.ac.kr

Important Findings

Fifty-five fowl adenovirus (FAdV) strains isolated from commercial chicken flocks in the Republic of Korea since 2007 were identified and the pathogenicity of these isolates was confirmed in specific-pathogen-free chickens of different age. The study results indicate that four FAdV serotypes (3, 4, 9, and 11) are the dominant serotypes of FAdVs in the Korea and are pathogenic enough to cause clinical disease in young chicks.

Significance of Findings

The present investigation provides important information on the epidemiology and pathogenesis of FAdVs and highlights the importance of control strategies against FAdV infection in Korea. The findings could be helpful in the selection of a strain for development of an FAdV vaccine in Korea. More detailed investigations on the biologic and antigenic characteristics of FAdVs are needed for prevention of FAdV infection.

Additional Information

FAdV infection often causes slight to moderate mortality with a clinical disease that is characterized by inclusion body hepatitis (IBH), hydropericardium syndrome, respiratory disease, and other

symptoms in chickens and other birds. As FAdVs are known to cause a mildly pathogenic and ubiquitous disease, it has been assumed that FAdV infection could not cause serious problems in poultry farms. However, FAdV infections have been increasing and are causing considerable economic losses in many countries such as India, North America, Russia, and Japan.

FAdVs have been grouped into five species (A–E) and further divided into 12 serotypes. Fowl adenovirus infections are routinely diagnosed by virus isolation in embryonated eggs or cell culture and by electron microscopy or, more recently, by polymerase chain reaction (PCR). PCR, followed by restriction enzyme digestion of the products, allows the differentiation of field isolates to species and presumptive serotypes; this method has been more recently supported by sequencing data.

FAdVs have a worldwide distribution and serotypes or genotypes of FAdV tend to differ according to geographic regions. Therefore, identification of the serotype involved is very useful for epidemiologic tracing and is of critical importance where vaccination is to be used for effective control of FAdV. Recently, the number of IBH outbreaks associated with FAdVs has increased in Korea. Nevertheless, the serotypes or genotypes of the viruses involved in these FAdV outbreaks are still unknown. Furthermore, it is not known whether the high incidence of FAdV infection in Korea is somehow correlated with an increased virulence of FAdVs. The results from this study will further the understanding of FAdVs and could be helpful in designing intervention strategies for FAdV infections in the poultry industry.

Copyright © 2011, American Association of Avian Pathologists, Inc. 1933-5334 online

Caracterización en la Identificación y Virulencia de Adenovirus de Aves de Corrales en la República de Corea

Tae-Hyun Lim, Hyun-Jeong Lee, Dong-Hun Lee, Yu-Na Lee, Jae-Keun Park, Ha-Na Youn, Myung-Seob Kim, Ho-Sik Youn, Joong-Bok Lee, Seung-Yong Park, In-Soo Choi, y Chang-Seon Song
Dirección para contactar: songcs@konkuk.ac.kr

Hallazgos Importantes

Cincuenta y cinco cepas de adenovirus de aves de corral (FAdV) aisladas de parvadas comerciales de pollo en la República de Corea desde el 2007 fueron identificadas y se confirmó la patogenicidad de estos aislamientos en pollos libres de patógenos específicos de diferentes edades. Los resultados del estudio indican que cuatro de los serotipos de FAdV (3, 4, 9 y 11) son los serotipos dominantes de los FAdVs en Corea y son suficientemente patogénicos como para causar enfermedad clínica en pollos jóvenes.

Relevancia de los Hallazgos

La presente investigación proporciona información importante sobre la epidemiología y patogénesis de los FAdVs y subraya la importancia de las estrategias de control contra la infección por FAdV en Corea. Los hallazgos podrían ser de ayuda en la selección de una cepa para el desarrollo de una vacuna FAdV en Corea. Se

necesita de más investigaciones detalladas en las características biológicas y antigénicas de los FAdVs para la prevención de la infección por FAdV.

Información Adicional

La infección por FAdV frecuentemente causa una mortalidad ligera a moderada con una enfermedad clínica que se caracteriza por hepatitis con cuerpos de inclusión (IBH, por sus siglas en inglés), por síndrome del hidropericardio, enfermedad respiratoria y otros síntomas en pollos y otras aves. Debido a que se sabe que los FAdVs causan enfermedades ubicuas y levemente patogénicas, que la infección por FAdV no podría causar serios problemas en las granjas avícolas. Sin embargo, la infección por FAdVs ha estado aumentando y está causando considerables pérdidas económicas en muchos países como India, Norteamérica, Rusia y Japón.

Los FAdVs se han agrupado en cinco especies (A–E) y se han dividido aún más en 12 serotipos. Las infecciones por adenovirus de aves de corral se diagnostican de forma rutinaria por medio de aislamiento del virus en huevos embrionados o en cultivos celulares y

Copyright © 2011, American Association of Avian Pathologists, Inc. 1933-5334 online