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IDENTIFICATION OF A NEWLY ISOLATED AVIAN INFECTIOUS BRONCHITIS CORONAVIRUS VARIANT IN CHINA EXHIBITING AFFINITY FOR THE RESPIRATORY TRACT

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Study Results

Commercially used H120 vaccine could not provide sufficient protection against CK/CH/LSD/05I challenge in the vaccination-challenge test in this study. However, two attenuated heterologous infectious bronchitis virus (IBV) strains, tl/CH/LDT3/03 and CK/CH/LHLJ/04V, offered satisfactory clinical and kidney protection but poor respiratory protection against CK/CH/LSD/05I.

Significance of Study Results

This study may demonstrate that the use of a combination of commercially available vaccines and/or that of the attenuated heterologous strains would provide satisfactory protection against the variant CK/CH/LSD/05I. In addition, the study also reveals that IBV strains exhibiting different pathogenicities were found cocirculating in the chicken flock in China.

Additional Information

IBV is a common cause of respiratory disease in chickens worldwide. The immunization of susceptible chickens with only 1 antigenic type of the virus has been shown to induce partial or no protection against the other unrelated types. Thus, the isolation, typing, and antigenic study of IBV field isolates have become increasingly important for monitoring the emergence of new serotypes or variant viruses. By constantly monitoring the IBV types, we have been able to track the changes in the incidence and

distribution of IBV and identify the emergence of new problematic IBV types. The identification of new field IBV strains is also essential for evaluating the existing vaccination programs and for further developing new vaccination procedures for controlling the IB infection. Furthermore, monitoring IBV types is also very important for the study of the evolution of IBV field isolates.

The vaccines that are administered against IBV usually contain live-attenuated or killed virus strains of Massachusetts (Mass) serotype. However, vaccination programs for IBV are costly and difficult to implement because of the high risk of vaccination failure in the case of emergence of a novel virus strain. IBV vaccines selected for an individual flock typically represent the virus isolates that are most likely to be found considering the geographic region and flock characteristics (including flock genetics and purpose). When new IBV isolates are discovered, the vaccination programs selected, typically attempt to include vaccines that are antigenically similar to the field virus.

The primary aim of this study was to obtain the IBV field isolates from problem farms from different geographic regions in China (done in the period between 2005 and 2006), characterize them by molecular techniques, and determine the genetic relationships that exist between recent Chinese isolates and previously known IBV strains using sequence data analysis. The secondary aim of this study was to investigate the protection against the variant provided by the H120 vaccine and the attenuated heterologous strains in order to yield information that would be useful in vaccine selection and in developing future IBV vaccination strategies.

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