

Evaluation of the antigen relatedness and efficacy of a single vaccination with different infectious bronchitis virus strains against a challenge with Malaysian variant and QX-like IBV strains

ABSTRACT

Background: The predominant infectious bronchitis virus (IBV) strains detected in chickens in Malaysia are the Malaysian variant (MV) and QX-like, which are associated with respiratory distress, nephropathy, and high mortality. On the other hand, the antigenic relatedness and efficacy of IBV vaccines against these 2 field IBV strains are not well characterized. Objectives: This study aimed to determine the antigen relatedness and efficacy of different IB vaccine strains against a challenge with MV and QX-like strains. Methods: The antigen relatedness and the ability of different IB vaccine strains in conferring protection against MV and QX-like were assessed based on the clinical signs, macroscopic lesions, and ciliary activity. Results: The MV strain IBS037A/2014 showed minor antigenic subtype differences with the vaccine virus Mass H120 and 4/91 strains but showed major antigenic subtype differences with the K2 strain. The Malaysian QX-like strain IBS130/2015 showed major antigenic subtype differences with the MV strain IBS037A/2014 and the vaccine strains except for K2. Chickens vaccinated once with Mass (H120) or with non-Mass (4/91 and K2) developed antibody responses with the highest antibody titer detected in the groups vaccinated with H120 and 4/91. The mean ciliary activities of the vaccinated chickens were between 56 to 59% and 48 to 52% in chickens challenged with IBS037A/2014 and IBS130/2015, respectively. The vaccinated and challenged birds showed mild to severe lesions in the lungs and kidneys. Conclusions: Despite the minor antigenic subtype differences, a single inoculation with Mass or non-Mass vaccines could not protect against the MV IBS037A/2014 and QX-like IBS130/2015.

Keyword: Efficacy; QX-like; Infectious bronchitis virus; Variant