47. Cross-protection offered by the sequential use of live infectious bronchitis vaccines against heterologous IB variant 2 and IB 793B strains

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Infectious Bronchitis virus (IBV) is a coronavirus that causes respiratory disease but also affects chickens' performance, reduces egg production and egg quality and causes mortality. Although vaccines offering homologous protection are preferred it is reported that the combined use of different IBV live vaccines can provide cross-protection against other IBV strains. There are several live IBV vaccines approved for use in different countries, but this study used one containing IB H120 and D274 strains and another one with IB QX-like strain. It was evaluated if the sequential use of both vaccines spaced 7 days apart is able to confer cross-protection against strains IB Variant 2 (a strain of high prevalence in the Middle East and European countries) and IB 793B (one of the strains more prevalent in EU). Laboratory efficacy studies were designed considering the immunogenicity criteria of the European Pharmacopoeia (Ph.Eur.) monograph for live IBV vaccines (04/2023:0442). Ethical review and approval was performed prior to the research conducted on laboratory animals. One group of SPF chickens was vaccinated by coarse spray with one dose of vaccine containing live IB H120 and D274 strains at 1 day of age and with one dose of vaccine containing IB QX-like live strain at 7 days of age and another group of SPF chickens was kept non-vaccinated. At 28 days of age (three weeks after QX-like vaccination), chickens were either challenged with a virulent IB Variant 2 or a virulent IB 793B virus. At 5 or 7 days post-challenge respectively, chickens' ciliary activity in the tracheal epithelial cells was evaluated by means of the ciliostasis test. Percentage of protected birds in vaccinated group was 81.8% against IB variant 2 and 100% against IB 793B; both cases in compliance with Ph. Eur. requirements. The mean ciliostasis score per treatment group was calculated and compared between groups; in both cases the difference between vaccinated and controls was statistically significant (p-value<0.05). It can be concluded that the sequential administration of IB H120 + IB D274 live vaccine followed by an IB QX-like live vaccine 7 days later confers cross-protection against heterologous IB Variant 2 and IB 793B strains.

Keywords: avian Infectious Bronchitis virus; QX-like live vaccine; cross-protection; IB variant 2 strain; IB 793B strain