

Evaluation of the effects of an HVT-IBD vector vaccine on the immune system of layer pullets in comparison with two commercial live IBD vaccines

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Herpes virus of turkeys (HVT)-vectored vaccines have been experimentally tested in a variety of studies in meat-type birds and shown to be efficient and safe. Not much is known about the influence of a vector HVT-infectious bursal disease (IBD) vaccine on the development of immunity in layer pullets. Our objective was to compare the effects of vaccination with an HVT-IBD vector vaccine on the immune system and on the immune response of layer pullets, in comparison with two commercial infectious bursal disease modified live vaccines, one classified as intermediate and one as intermediate plus, respectively.

Material & methods

One-day old commercial brown pullets were randomly split in four groups and reared in isolation rooms up to 70 days of age. Group 1 was vaccinated with the vector vaccine subcutaneously at day-old. Group 2 and 3 were orally vaccinated with the intermediate or the intermediate plus vaccine, respectively, at 28 days of age to avoid the interference of maternally derived antibodies. Group 4 was not vaccinated against IBD. All groups were additionally vaccinated with a Rispens vaccine and with live infectious bronchitis and Newcastle disease vaccines, before a booster vaccination with an inactivated vaccine containing infectious bronchitis, Newcastle disease and EDS76 antigens. Blood samples were collected at day 1, 14, 21, 28, 35, 42 and lastly at day 70 of age when the experiment concluded with the necropsy of pullets.

Results / Discussion

At post-mortem examination significantly higher bursa to body weight ratios were recorded in the group vaccinated with the vector vaccine versus the other groups vaccinated. Live infectious bursal disease vaccines reduced the number of circulating B lymphocytes at day 42, in comparison to the HVT-IBD-vaccinated and to the control groups. Additionally, increased antibody titres were detected against Newcastle disease (Figure 1), infectious bronchitis (Figure 2) and EDS76 (Figure 3) in the HVT-IBD group as compared to the other groups, indicating an impairment of the B cells responsiveness in the IBD live vaccinated chickens.

Key words

Vector vaccine, immune response, layer pullets.

Figure 1: Mean Newcastle disease HI test antibodies.

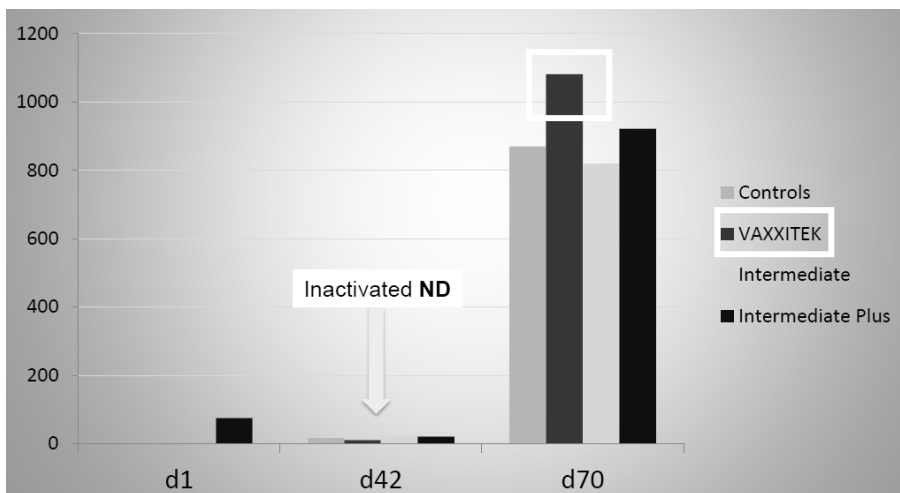


Figure 2: Mean infectious bronchitis Mass ELISA test antibodies.

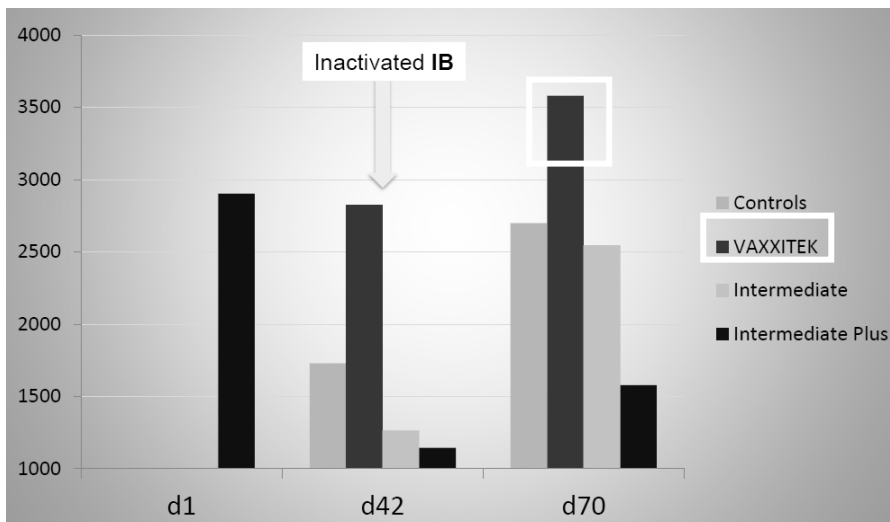


Figure 3: Mean EDS76 (Egg Drop Syndrome 1976) ELISA antibodies.

