Review

Marek’s virus vector vaccines inducing protection against Marek’s Disease and Infectious Bursal Disease: a field update

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Abstract

The control of Marek’s Disease (MD) was achieved in the poultry industry by using large-scale vaccination with the herpes virus of turkey (HVT) strain (1) in all systems of production, with or without other MD virus (MDV) vaccine strains such as SB-1 or Rispens. Since HVT was the most widely used MD vaccine on the market, mainly for the vaccination of broiler chickens (2006 worldwide production of 38 billion birds), its development as a vaccine vector seemed to be a logical choice (2). Infectious Bursal Disease (IBD) is another immunosuppressive disease of chickens that is usually controlled by vaccination with IBD modified-live vaccines (MLV) administered in drinking water at the farm. Different IBD MLV vaccines showing decreased attenuation levels (from mild to intermediate, intermediate-plus and hot MLV) have been developed to overcome the problems of maternal antibody interference and the emergence of very virulent IBD field strains (3). The delicate balance between efficacy and safety of these MLV vaccines and the variability of maternal antibody levels within a flock have remained unsolvable problems. The co-administration of live MD and IBD vaccines as early as possible, either in day-old chicks (4) or in the embryo, in ovo (5), has been proposed in order to induce early protection against both immunosuppressive diseases. This approach did not fully solve the safety/efficacy balance problem, and that is why the use of HVT as a vector for IBD vaccination was attempted (6). A HVT vector expressing the protective VP2 gene from the Faragher 52/70 IBD virus strain (vHVT13) was developed and licensed in Europe, the US, Latin America and Asian countries. It is administered either in day-old chicks (SC) or in ovo and induces full and long-term protection against challenge with different IBD viruses including classical, very virulent and variant strains, despite high levels of maternal antibodies (7, 8, 9). The first launch of vHVT13 vaccine (designed VAXXITEK® HVT+IBD) occurred in Brazil in April 2006. As of the beginning of 2008, 1 billion birds have been vaccinated with vHVT13 vaccine. Results obtained on the use of this vaccine in the field in different parts of the world will be presented. Overall, the use of this new IBD and MD bivalent vaccine was successful. Flock performances were

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significantly improved, especially in regions with severe IBD challenge. The replacement of the tricky drinking water vaccination practice at the farm by hatchery vaccination was seen as a major advantage in some areas. Hatchery vaccination had to be carefully controlled to guarantee high percentage of protection. In conclusion, this vector vaccine decreased farmer work load, improved flock performances and welfare of chickens, and solved the safety/efficacy dilemma of IBD MLV.