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SAFETY AND IMMUNOGENICITY OF THE CO-ADMINISTRATION OF EVANOVO®, GUMBOHATCH® AND A COMMERCIAL rHVT-ND VACCINE IN COMMERCIAL BROILERS

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BACKGROUND AND OBJECTIVES

In-ovo vaccination (IO) is a widely adopted method in the global broiler poultry business. A common platform for IO vaccination is via the recombinant herpesvirus (rHVT), whose genome incorporates stable insertion(s) of genetic material to stimulate immunity against various diseases. In addition, more vaccines are being developed for in IO such as EVANOVO®, a live attenuated vaccine against avian coccidiosis (HIPRA, S.A.) and GUMBOHATCH®, a live immune complex vaccine against Infectious Bursal Disease (IBD). Combining IO vaccination against coccidiosis with other vaccines could optimize and minimize hatchery vaccination processes without compromising the immunogenicity of the co-administered vaccines. The objective of this study was to assess the safety and immunogenicity of the co-administration of EVANOVO®, GUMBOHATCH® and a rHVT ND vaccine when mixed before IO administration to 18-day-old broiler embryonated eggs.

MATERIALS & METHODS

18-day-old broiler chicken embryonated eggs from the same batch were randomly distributed into 3 groups. These were equally allocated based on weight as 105 embryonated eggs per group. Each group received different vaccination plans according to Table 1. IO vaccines were mixed before administration. The rHVT/ND solvent was used to prepare the IO vaccines mixture. The vaccines were stored, prepared and co-administered within their shelf life after reconstitution according to their summary of product characteristics. After hatching, 90 chicks from each group were included in the study. Feed and water were supplied *ad libitum*. All the chicks were housed in different floor pens in the same room under similar conditions for 47 days.

Groups	IO administration	Coarse Spray Administration	Total number of eggs (day -3)	No. of animals
A	EVANOVO® + GUBOHATCH® + HVT - ND vac.	-	105	90
B	GUMBOHATCH® + HVT - ND vac.	EVANT®	105	90
C	GUMBOHATCH® + HVT - ND vac.	-	105	90

Table 1. Experimental design

The safety of co-administration was evaluated by observing the hatching rate (%), viability and possible adverse reactions. Newcastle disease (ND) and Infectious bursal disease (IBD) specific antibody levels were measured 47 days after hatching. Weekly oocyst counts were performed until 35 days after hatching.

RESULTS

No adverse reactions were reported in any of the groups at hatchery level. In addition, no statistically significant differences were observed between groups in the hatching rates. No clinical signs were detected during the entire study period.

Group A resulted in similar antibody titres at the end of the study when compared to Groups B and C (Figures 1 and 2).

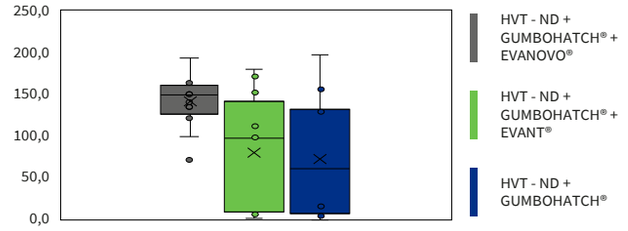

Figure 1. ND seroconversion titres at the end of the study period (day 47 post-hatch). Positivity is considered to be when ELISA titres are ≥ 993 (BioChek NDV-F Antibody test kit, CK122).

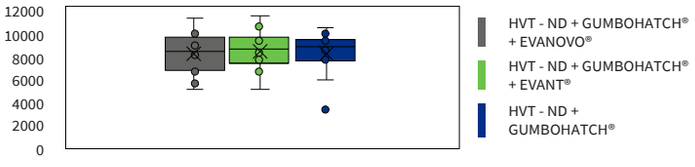

Figure 2. IBD seroconversion titres at the end of the study period (day 47 post-hatch). Positivity is considered to be when antibody titres are ≥ 391 (BioChek IBD Virus Antibody test).

The oocyst counts in groups A and B indicated that both the administration and the post-vaccination *Eimeria* vaccinal strains replication were adequate.

Only on D21 were statistically significant differences found between groups A and B with group C. No statistically significant differences in weight were observed at any other timepoint in the study (Figure 3).

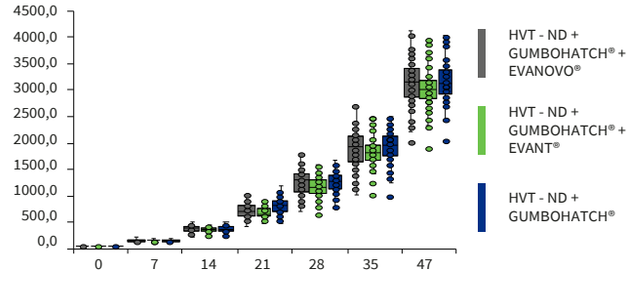

Figure 3. Progression of the body weight of the birds per treatment, at different time points.

DISCUSSION AND CONCLUSIONS

Birds immunized with EVANOVO®, GUMBOHATCH® and HVT – ND vaccines by the IO route showed a normal profile of oocyst counts after vaccination and a similar antibody response against IBD and ND in comparison with the other vaccination schedules. The use of a rHVT-ND vaccine with EVANOVO® and GUMBOHATCH® vaccines can provide adequate and similar protection, in comparison with the IO administration of the HVT – ND vaccine and GUMBOHATCH® without the inclusion of EVANOVO®, regardless of the implementation of a coarse spray coccidiosis vaccination of 1-day-old birds with EVANT®.

These results suggest that the co-administration of EVANOVO®, GUMBOHATCH® and HVT-ND vaccines is as efficient as individual vaccine administration in protecting birds against coccidiosis, Marek's disease (MD), Newcastle disease (ND) and Gumboro disease (IBD).