The **Reference** in **Prevention** for **Animal Health**

EVALUATION OF THE SAFETY AND EFFICACY OF GUMBOHATCH® VACCINE COMPARED TO A STANDARD-FORMULATED IMMUNE COMPLEX VACCINE IN A MULTI-FARM FOLLOW-UP TRIAL IN SPAIN

OBJECTIVE

The present multi-farm follow-up trial was performed with the aim of evaluating the safety and efficacy of GUMBOHATCH® when administered via the subcutaneous route under field conditions within a large company in Spain compared to a standard-formulated immune complex vaccine.

MATERIAL & METHODS

During the period of August-September 2020, a total of 745,597 chicks was vaccinated subcutaneously (1 D.O.C.) with GUMBOHATCH®, following the manufacturer's instructions, which were distributed between 23 different farms. During the same period, 1,058,939 chicks were also vaccinated subcutaneously (1 D.O.C.) with a standard-formulated immune complex vaccine and distributed to 30 farms. Six farms vaccinated with GUMBOHATCH® were monitored up to the end of rearing. Several safety and efficacy parameters were evaluated during this period. Blood sampling and necropsy of 15 chicks per house or farm were performed at different time points. Antibody titres to the IBD virus were determined using CIVTEST® AVI IBD (HIPRA). During necropsies, bursal imprints on FTA cards were collected for PCR analysis from 27 days of age.

Productive parameters from the all the farms vaccinated with GUMBOHATCH® were compared with farms vaccinated in the same period with the standard-formulated immune complex vaccine. Feed conversion rate was corrected by average slaughter weight (2.88 kg) and average daily gain was corrected by average age at slaughter (45.69 days). Descriptive in continuous variables were shown as the mean weighted by the number of birds. A linear model was used to examine the effect of the vaccine on the different productive parameters using the statistical program package R v4.0. A probability level of $p < 0.05$ was chosen as the limit for statistical significance in all tests.

RESULTS

SAFETY

No adverse reactions to GUMBOHATCH® were observed.
Similar hatchability and body weight after hatching were observed in all batches.
Expected macroscopic signs of vaccine virus replication were observed in some of the bursas evaluated.

EFFICACY

PCR results from bursal imprints evidenced replication of the vaccine virus from day 27-28 onwards in all houses/farms. The evolution of antibody titres to the IBD virus after vaccination followed a similar pattern in all farms and houses, showing a rapid increase in vaccine-induced antibodies from day 28 onwards up to the end of rearing (Figure 1).

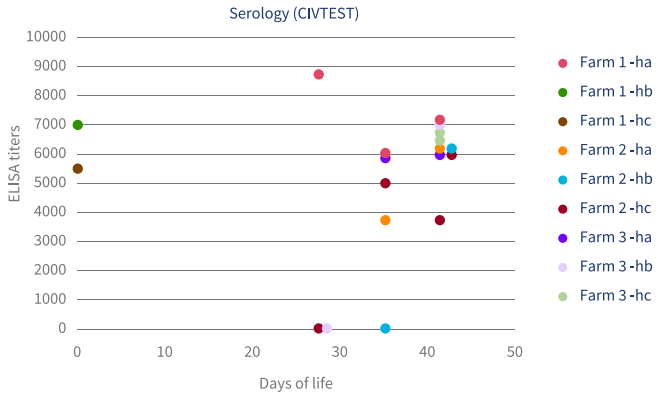

Figure 1. Evolution of serum antibody titres to the IBD Virus (ELISA titre mean; cut-off value =357) until the end of rearing (44 days of life).

Productive parameters are shown in Table 1. Significant differences were observed in average daily gain (ADG) and feed conversion rate (FCR) in the batches vaccinated with GUMBOHATCH® compared with the standard-formulated immune complex vaccine.

	GUMBOHATCH®	Standard ICX
Number of batches	39	56
Total birds at entry	745,597	1,058,939
Total birds at slaughter	716,073	1,018,257
Average weight (kg)	3.07	2.92
Bird's age at slaughter (days)	47.3	47.05
FCR corrected	1.72	1.72
ADG corrected days (g/day)	64.52[a]	61.84[b]
Total mortality (%)	3.94	3.83
EPEF	356.7[a]	346.95[b]
Batches with antibiotics (%)	48%	50%

[a,b] Numbers with different superscripts indicate significant statistical differences ($p < 0.05$).

Table 1. Comparison of productive parameters between GUMBOHATCH® and the standard immune-complex vaccine in the same period (August-September 2020).

On the basis of these results, variable costs on the different farms were calculated and compared (Table 2). DOC price (€/bird), feed price (€/kg feed), live weight price (€/kg) and vaccine price were considered to be equal. The variable costs were reduced by 0.0107 €/ kg live weight when batches were vaccinated with GUMBOHATCH® compared to vaccination with the standard-formulated immune complex vaccine.

Cost per kg live weight	Standard ICX	GUMBOHATCH® (€)	Difference (€)
Feed	0.6576	0.6556	0.0020
Day old chicks	0.1061	0.0997	0.0064
Vaccines	0.0030	0.0030	0.0000
Medication	0.0050	0.0030	0.0020
Total	0.7720	0.7613	0.0107

Table 2. Comparison of variable costs per kg live weight between GUMBOHATCH® and the standard immune complex vaccine in the same period (August-September 2020).

CONCLUSIONS

The results obtained in this study allow the conclusion to be drawn that vaccination with GUMBOHATCH® is safe and confers good protection (both humoral and by competitive exclusion) against IBD when administered via the subcutaneous route under field conditions. Comparison of productive parameters with flocks vaccinated in the same period with a standard-formulated immune complex vaccine, also showed a better performance in the case of batches vaccinated with GUMBOHATCH®, resulting in a decrease in the variable productive costs for the farm.