Evaluation of vaccine administration of Nobilis® Salenvac T in laying pullets

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INTRODUCTION

Nobilis Salenvac T is an inactivated vaccine containing the antigens Salmonella Enteritidis (SE) and Salmonella Typhimurium (ST). The objectives of this study were (i) to monitor the antibody response after vaccination of pullets using two commercial ELISA tests and (ii) to provide interpretative criteria for the evaluation of the vaccination quality.

METHODS AND MATERIALS

Sera samples have been collected from farms located in different parts of France.
Three groups of farms were distinguished:

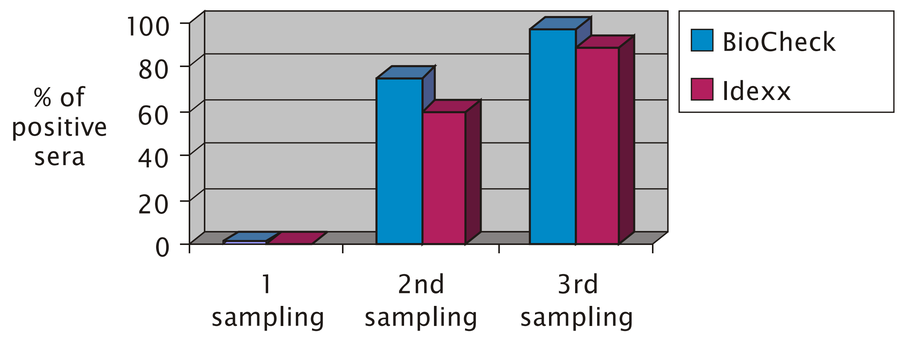
- Group A: 14 flocks, cage system, birds vaccinated by the trial performers, 40 wing tagged pullets blood sampled three times.
- Group B: 16 flocks, floor or cage systems, birds vaccinated by the farmer, 10 or 20 randomly selected pullets at each sampling.
- Group C: 3 flocks, floor or cage systems, no salmonella vaccination, 10 or 20 randomly selected pullets at each sampling.

Blood samples were collected from the selected pullets : on the day of the first injection of the vaccine, on the day of the second injection and 4 weeks after the second injection.
The sera were analyzed in one laboratory using two different Elisa kits : Salmonella Enteritidis GM antibody test kit (BioCheck, Gouda, Holland) and FlockCheck Salmonella Enteritidis antibody test (Idexx, Cergy Pontoise, France).

RESULTS

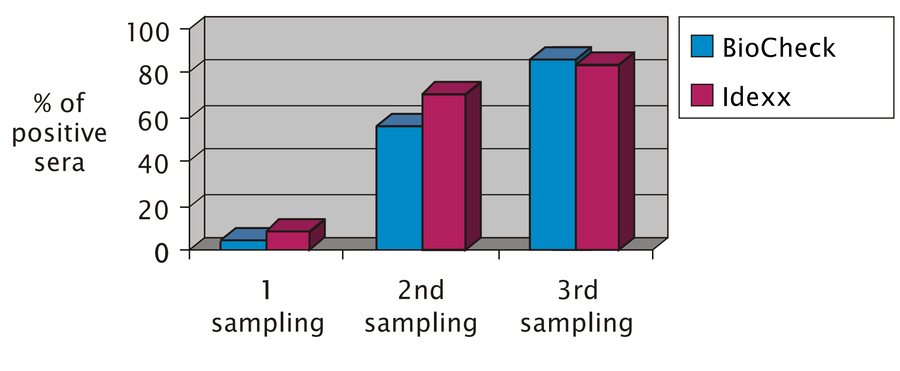
Group A : figure 1
The percentage of positive sera increased after the first and the second injection and reached 96.6 % in BioCheck and 88.4 % in Idexx at the third sampling.
Although vaccinated twice by ourselves some pullets did not sero-convert during the experiment.

figure 1: Percentages of positive sera in group A flocks



Group B : figure 2
We observed the same tendency as in group A, but the results were lower and reached 84.8 % in BioCheck and 82.7 % in Idexx.

figure 2: Percentages of positive sera in group B flocks



Group C
All sera remained negative.

From the results obtained 4 weeks after the second injection of Nobilis Salenvac T in group A, it has been possible establishing the evaluation criteria to judge the vaccine administration quality (Table 1). Based on these criteria we could evaluate the vaccine administration quality of 16 flocks in group B :

- 5 of the 16 flocks were poorly vaccinated,
- 6 of 16 flocks were well or very well vaccinated,
- For 5 flocks it was difficult to conclude due to discrepant results between BioCheck and Idexx ELISA tests.

Sera number(N)	Number of negative sera in the sampling	Interpretation
BioCheck		
N ≤ 16	1	Very good injection
	2	Good injection
	>2	Should be improved
17 ≤ N ≤ 29	≤ 2	Very good injection
	3	Good injection
	>3	Should be improved
Idexx		
13 ≤ N ≤ 23	≤ 2	Very good injection
	3	Good injection
	>3	Should be improved

Table 1: criteria to evaluate the vaccine administration of Nobilis Salenvac T on blood samples, 4 weeks after the second injection.

DISCUSSION

The positive results before vaccination could be due to cross reactions with *Escherichia coli*. Preliminary studies on test specificity have evidenced such reactions when *E coli* reference sera were tested with both ELISA kits. Moreover all flocks were negative for SE and ST in official controls for *Salmonella* at the end of rearing period.

In one flock pullets, injected only once with Nobilis Salenvac T at 12 weeks of age, the percentages of positive sera at third sampling (35 % in BioCheck and 20 % in Idexx) were lower than those observed at second sampling (48 % with both kits). These data show that it is possible to identify flocks in which only one vaccine injection has been administered to pullets.

When farmers were answered about the vaccination practices it was demonstrated that best results were obtained when vaccination was performed with: vaccines at room temperature, slow injection speed and appropriate injection material.

CONCLUSION

From this study, evaluation criteria for the vaccine administration of Nobilis Salenvac T are available. This makes it possible to improve the vaccination practices in order to obtain better protection in chicken against salmonella contaminations.

REFERENCES

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