THE USE OF ELISA (BIOCHEK) TO DETECT ANTIBODIES FOLLOWING VACCINATION WITH DIFFERENT RECOMBINANT HVT VECTORED VACCINES FOR NDV, ILTV, AND IBDV.

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INTRODUCTION

The ELISA test is one of the most widely used diagnostic technologies available. In addition to diagnostics, it has been proven as a practical means to evaluate the success of vaccination. In determining the success of an individual program, it is crucial to know what results are expected following a particular vaccination. For many of the conventional live and inactivated vaccines, ELISA (BioChek) guidelines have been reported (3). However, there is now a new generation of vaccines. These vaccines are recombinant viral vector vaccines, containing as vectors fowl pox virus (FPV) or herpesvirus of turkey (HVT). Recombinant vaccines based on HVT as the vector expressing genes that code for specific ILTV, NDV, or IBDV antigens, for example, to induce immunity for ILTV, NDV, or IBDV are more recent vaccines. With the use of these new recombinant vectored vaccines, new practical guidelines are needed to assist with interpretation of ELISA results. Results have been previously reported for the recombinant (r) HVT-ILT, Innovax-ILT® using the BioChek ILT ELISA and for the rHVT-IBD vaccine, Vaxxitek® HVT+IBD, using 2 different IBD ELISA kits (1, 2). This paper highlights the results observed on BioChek ELISAs after vaccination with the recombinant HVT vectored vaccines and provides guidelines to assess successful vaccination and aid in the interpretation of field results.

PROCEDURES

Broilers were vaccinated either *in-ovo* at 18 days of embryogenesis or subcutaneously at one day of age with different recombinant HVT vectored vaccines containing immunogenic proteins for NDV, IBD, or ILT. At different intervals post-vaccination, sera was collected and assayed for NDV, IBD, or ILT antibodies using ELISA (BioChek) and virus neutralization (VN) or hemagglutination inhibition (HI) assays.

RESULTS AND CONCLUSIONS

The BioChek IBD, NDV, and ILT ELISA kits are suitable for monitoring vaccination with the respective HVT vectored recombinants. There was a good correlation between the conventional serology (VN or HI) and ELISA (data will be presented). Furthermore, the ELISAs were capable of differentiating between normal vaccination response and field challenge. The ideal time for monitoring is after 35 days. Mean titers after vaccination with the recombinant HVT vector vaccines tend to be very low, particularly the rHVT-ND and rHVT-ILT vaccines (Table 1). It has

been reported that for rHVT-ILT the percent positive is more useful in accessing vaccination and/or challenge (2). For rHVT-ND, the trend was similar.

The guidelines provided below are based on a limited number of studies with currently available/licensed vaccines. More data is still needed to validate these trends and confirm the results. In addition, new vaccines are continually being developed which may show different ELISA results post-vaccination and post-vaccination/challenge. As vaccines are developed, it is important to evaluate and develop guidelines to assist with interpretation. In conclusion, these results show that BioChek ELISAs are capable of detecting and differentiating the current rHVT - (ILT, IBD, and ND) vaccines from field challenge.

Table 1. BioChek ELISA guidelines for interpretation in broilers vaccinated with recombinant HVT vectored vaccines

	IBD	ILT	NDV
Vaccine	rHVT-IBD	rHVT-ILT	rHVT-ND
Ideal time to test	35-55 d	>40 d	> 40 d
Mean Titer	500-3000	500-1500	500 - 1500
% Positive	80-100	10-60	10-60
%CV	> 45	> 40	> 50
VI	10-50	< 40	< 40
	Suspect challenge		
Mean Titer	> 4000	> 2000	> 3000
% Positive	100	$\geq$ 80	$\geq$ 80
%CV	< 45	< 40	< 40
VI	$\geq$ 100	$\geq$ 50	$\geq$ 100

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