

The Synbiotics ProFLOK® Avian Reovirus (REO) antibody ELISA kit is a rapid and specific USDA-licensed serologic test for the detection of REO antibody in chicken serum samples. It was developed primarily to aid in the detection of pre- and post-vaccination REO antibody levels in chickens.

Reovirus has been isolated from chickens with arthritis (Tenosynovitis), diarrhea and growth retardation<sup>1</sup>. Chickens and turkeys have been found to be susceptible to Reovirus derived viral arthritis<sup>1</sup>. The disease is most common in 5 to 7 week old broiler chickens, but can occur in older birds. The infection causes inflammation of the synovial membrane and tendon sheath.

The Synbiotics REO ELISA kit has the following benefits:

- Reliable, consistent results
- USDA-licensed
- High-volume, easy-to-use format
- Long shelf life. All Synbiotics kits have an 18-month shelf life.
- Powerful database management software system
- Excellent field-oriented technical support

## 1. Specificity

The results shown in Table 1 below indicate that the Synbiotics REO ELISA kit demonstrates excellent specificity to REO antibody samples, but does not react significantly to other infectious agent antibodies. The Synbiotics REO ELISA kit, like all Synbiotics ELISA kits, is highly specific to provide valid, reproducible test results.

**Table 1. Specificity.**  
Average sample-to-positive (SP) ratio values, SP ranges, and titer values for a specificity serum panel assayed with the SBIO REO ELISA test.

Reference Serum	Average SP <sup>A,B</sup> Ratio Values	SBIO REO ELISA SP Range <sup>C</sup>	SBIO REO ELISA Titer Values <sup>D</sup>
Normal Control Serum (NCS)	0.000	-	0
Infectious bursal disease virus (IBD)	0.010	-	0
Infectious bronchitis virus - Mass (IBV)	0.010	-	0
Avian reovirus (REO)	<b>0.824</b>	<b>+</b>	<b>1185</b>
Newcastle disease virus (NDV)	0.110	-	0
Avian encephalomyelitis virus (AE)	0.050	-	0
Infectious bronchitis virus - Ark (IBV)	0.010	-	0
Infectious bronchitis virus - Con (IBV)	0.090	-	0
Infectious bronchitis virus - JMK (IBV)	0.010	-	0
Infectious bronchitis virus - H52 (IBV)	0.100	-	0
Infectious bronchitis virus - M41 (IBV)	0.030	-	0
Mycoplasma gallisepticum (Mg)	0.070	-	0
Mycoplasma synoviae (Ms)	0.040	-	0
Infectious Laryngotracheitis (ILT)	0.110	-	0

<sup>A</sup>Values are the arithmetic mean of 15 replicate samples (3 replicates / 5 ELISA plates)

<sup>B</sup>Sample SP Ratio =  $\frac{\text{Optical Density (OD) sample} - \text{Avg. OD Normal Control}}{\text{Avg. OD Positive Control} - \text{Avg. OD Normal Control}}$

<sup>C</sup>SBIO REO ELISA SP threshold ranges: Negative (-) =  $\leq 0.150$

Positive (+) =  $> .150$

<sup>D</sup>Log<sub>10</sub> titer =  $(1.077 \times \text{Log}_{10} \text{SP}) + 3.460$

## 2. Sensitivity

The data shown in Table 2 demonstrate the sensitivity of the Synbiotics REO ELISA kit as compared to the conventional VN test. Sera from a panel of sera with known VN results was tested for REO antibodies with the Synbiotics REO ELISA.

**Table 2. Sensitivity.**  
Comparison of SBIO REO ELISA titer values and titer values to the conventional REO Virus Neutralization (VN) test.

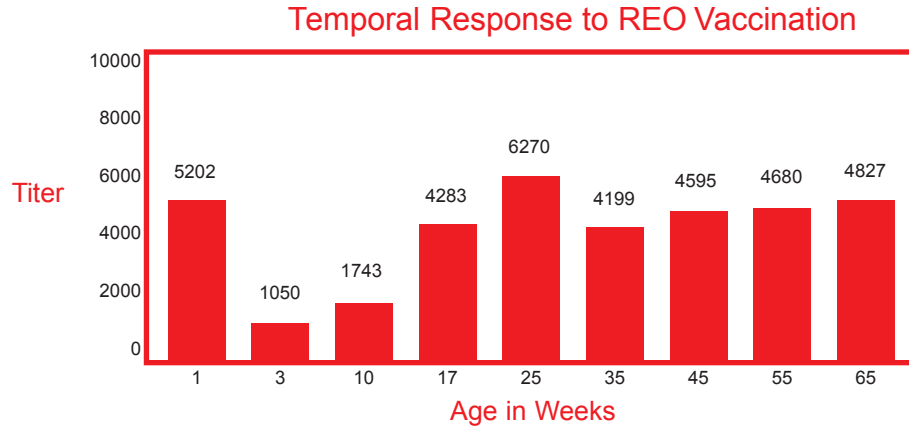
Sample	VN Titer <sup>B</sup>	SBIO REO ELISA Titer <sup>A</sup>
1	597	3652
2	395	2072
3	128	1574
4	96	994
5	32	581

<sup>A</sup>Log<sub>10</sub> titer =  $(1.077 \times \text{Log}_{10} \text{SP}) + 3.460$

<sup>B</sup>REO VN results from a commercial laboratory using USDA standard strain (100 TCID<sub>50</sub>).

The data presented in Chart 1 indicate a typical antibody profile obtained with the Synbiotics REO ELISA kit for breeder flocks following a typical vaccination program. All Synbiotics ELISA kits are optimized to provide valid, reproducible results test after test, day after day.

Chart 1. Typical antibody profile. Each data point represents the antibody response to a typical REO vaccination program of approximately 200 flocks. Measured using the SBIO REO ELISA test.



## Suggested Uses

1. REO Vaccination Evaluation:
  - Randomly collect and assay 30 or more serum samples per flock immediately prior to REO vaccine administration (pre-vaccination) and 2 to 6 weeks post vaccination.
2. Routine REO Flock Profiling:
  - Collect and assay 30 or more serum samples per flock, particularly breeder hen flocks, on a routine basis (i.e. every four to six weeks).

## Interpreting Results

Evaluate Synbiotics REO ELISA results for the following:

1. Uniformity
  - Measured by the coefficient of variation value (CV%).
  - the lower the CV% value for a flock tested, the better the titer value uniformity.
  - Strive for the best 1-3 day old, pre-vaccination, and post-vaccination REO titer value uniformity (i.e. CV of less than 45%).
2. Titer Values
 

SP Threshold: Each Synbiotics ELISA kit has a sample-to-positive (SP) value threshold that clearly separates positive samples from negative samples. A negative sample is one that is not significantly different from the kit normal control serum. The SP threshold for the REO ELISA is as follows:

SP Range	Titer Range
0.150 or less	0
0.151 and greater	376 and greater

Vaccination Evaluation: Compare pre- and post-vaccination ELISA average mean titers, geometric mean titers and %CV values. A flock geometric mean titer following vaccination of 1700 is considered to be "protective". Note: Postvaccinal REO ELISA values depend on a variety of factors such as IBD vaccine strain, route of administration, age of bird, etc. The goal of any vaccination program should be to achieve as uniform postvaccinal titer values for each vaccinated flock (i.e. %CV 45 or less) as possible.

Flock Profiling: Review ELISA flock profiles and correlate REO ELISA titer levels to vaccination program, flock economic performance data (body weight gain, feed conversion, mortality, etc.) and presence or absence of field infection.

## References

1. Olson, N.O., Reovirus Infection. In: Diseases of Poultry. 7th edition (edited by M.S. Hofstad, et al.) Ames, Iowa, Iowa State University Press, 1978.