

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

IBD is one of the most economically important diseases that affects commercial chickens¹. The Synbiotics IBD+ ELISA kit specifically detects IBD antibody and demonstrates excellent correlation with the Virus Neutralization (VN) test. It shows broad reactivity to both classic and variant strains of IBD virus. The Synbiotics IBD+ 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.

Plate Antigen

The IBD+ test plates have been coated with a native IBDV antigen of bursal origin.

1. Specificity

The results shown in Table 1 below indicate that the Synbiotics IBD+ ELISA kit demonstrates excellent specificity to IBD antibody samples, but does not react significantly with antibodies against other antigens tested. The Synbiotics IBD+ 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 for an antigen specificity panel assayed with the SBIO IBD+ ELISA test.

Antigen	Average SP ^{A,B} Ratio Values	SBIO IBD+ ELISA SP Range ^C
Avian Pox virus	0.010	-
Avian reovirus (REO)	0.018	-
Reticuloendotheliosis virus (REV)	0.004	-
Infectious laryngotracheitis virus (ILT)	0.002	-
<i>Mycoplasma gallisepticum</i> (Mg)	0.002	-
<i>Mycoplasma synoviae</i> (Ms)	0.096	-
Newcastle disease virus (NDV)	0.016	-
Infectious bronchitis virus (IBV)	0.022	-
Avian encephalomyelitis (AE) virus	0.056	-
Chick Anemia Virus (CAV)	0.076	-
SPF Negative	0.004	-
Infectious bursal disease (IBD) virus	3.576	+

^AValues are the arithmetic mean of 15 replicate samples (3 replicates / 5 ELISA plates)

^BSample SP Ratio = $\frac{\text{Optical Density (OD) sample} - \text{Avg. OD Normal Control}}{\text{Avg. OD Positive Control} - \text{Avg. OD Normal Control}}$

^CSBIO IBD+ ELISA SP threshold ranges: Negative (-) = ≤ 0.299
Positive (+) = > 0.299

2. Sensitivity

The data shown in Table 2 demonstrate the sensitivity of the Synbiotics IBD+ ELISA kit as compared to the conventional VN test. Broiler chicks were bled at 1, 6, 7, 8, 13, 14, 15, 20, and 28 days post hatch. All sera were tested for IBDV maternal antibodies with the Synbiotics IBD+ ELISA and the VN assay (using USDA standard strain).

Table 2. Sensitivity.

Comparison of SBIO IBD+ ELISA titer values, and titer values to the conventional IBD Virus Neutralization (VN) test for a panel of broiler chicks obtained from commercial sources and housed in isolators.

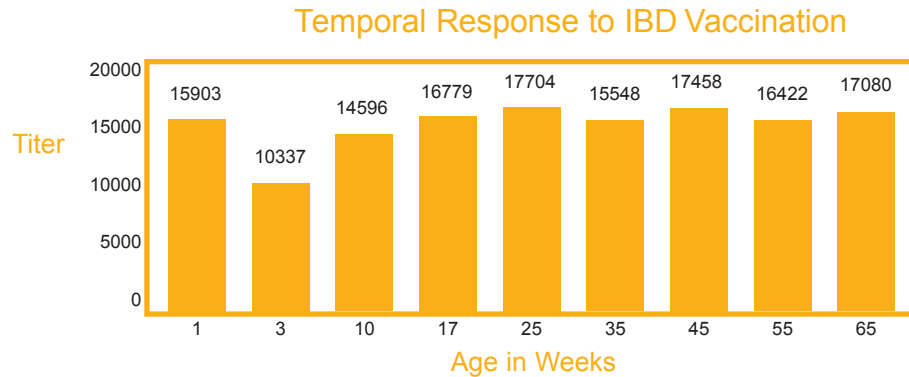
Age in Days	SBIO IBD+ ELISA Titer ³	VN Titer ⁴
1	10036	14.27
6	8628	12.85
7	7936	12.3
8	8261	12.25
13	5649	10
14	4329	9.3
15	5334	8.5
20	3091	7.2
28	653	5.3

³Log₁₀ titer = (1.464 x Log₁₀ SP) + 3.197

⁴IBDV VN results from a commercial laboratory using USDA standard strain.

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

Chart 1. Typical antibody profile. Each data point represents the antibody response to a typical IBD vaccination program of approximately 150 flocks. Measured using the SBIO IBD+ ELISA test.



Suggested Uses

1. IBD Vaccination Evaluation:
 - Randomly collect and assay 30 or more serum samples per flock immediately prior to IBD vaccine administration (pre-vaccination) and 2 to 6 weeks post vaccination.
2. Routine IBD 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 IBD+ 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 IBD 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 IBD+ ELISA is as follows:

SP Range	Titer Range
0.299 or less	0
0.300 and greater	1002 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 4000 is considered to be “protective”. Note: Postvaccinal IBD+ 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 IBD+ 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. Lasher, H. and S.W. Shane, Infectious Bursal Disease. World's Poultry Science Journal. Volume 50. July 1994.