

The Synbiotics ProFLOK PLUS **Avian Leukosis Virus Subgroup J (ALV-J) Antibody ELISA kit** is a rapid, specific and sensitive immunoassay for the detection of ALV-J antibodies in chicken sera.

Avian Leukosis Virus subgroup J (ALV-J) is a recently discovered member of the avian leukosis-sarcoma group of retroviruses¹. It induces myelocytic myeloid leukemia (ML) and has a tropism for the cells of the myeloid rather than the lymphoid lineage². The virus has unique envelope properties and nucleotide sequence analysis has shown that the gp85 domain of the subgroup J virus has about 40% identity with corresponding regions of the other ALV subgroups³.

Plate Antigen

Among the ALV-J encoded proteins, the virus envelope gp85 protein contains targets for neutralizing antibodies as well as regions that may be important in interactions with the host receptor. The gp85 protein is used in the ELISA for the detection of ALV-J specific antibodies.

Suggested Uses

Screen flocks to monitor for horizontal transmission of the virus.

Monitoring of Breeder Flocks: It is important that breeder flocks are ALV-J antibody negative before going into production. Assay 30 or more randomly collected serum samples per flock. Breeder flocks should be tested routinely while in production. To interpret results of the Synbiotics ALV-J ELISA kit, refer to the Interpreting Results section on the back of this page.

Kit Performance

The Synbiotics ALV-J ELISA kit has been extensively tested for the following parameters:

1. Stability

The Synbiotics ALV-J ELISA kits have a shelf-life of 18 months from the date of manufacture. The expiration date for each kit is clearly marked on the kit box label.

2. Efficacy

The results shown in Table 1 below indicate that the Synbiotics ALV-J ELISA kit demonstrates excellent specificity (i.e. no false positive reactions) to reference sera for numerous infectious agents of poultry and other subgroups of ALV. The ALV-J ELISA kit, like all Synbiotics ELISA kits, is highly specific to provide valid, reproducible test results.

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

Antigen	Average SP ^{A,B} Ratio Values	SBIO ALV-J ELISA SP Range ^C
Avian Pox virus (APV)	0.010	-
Avian reovirus (REO)	0.000	-
Reticuloendotheliosis virus (REV)	0.000	-
Infectious bursal disease (IBD) virus	0.000	-
Infectious laryngotracheitis virus (ILT)	0.000	-
Lymphoid Leukosis A (LLA)	0.000	-
Lymphoid Leukosis B (LLB)	0.040	-
Avian Leukosis Virus A (ALV-A)	0.090	-
Avian Leukosis Virus B (ALV-B)	0.080	-
Avian Leukosis Virus C (ALV-C)	0.170	-
Avian Leukosis Virus D (ALV-D)	0.090	-
Avian Leukosis Virus E (ALV-E)	0.080	-
Avian Leukosis Virus J (ALV-J)	0.600	+

^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 ALV-J ELISA SP threshold ranges: Negative (-) = ≤ 0.399
Positive (+) = > 0.399

ALV-J

ProFLOK® PLUS

A study was conducted to compare the relative sensitivity and specificity of the Synbiotics ALV-J ELISA and the Virus Neutralization (VN) test. Samples specific to various strains of ALV-J were tested on the Synbiotics ALV-J Antibody ELISA and the VN against HC1 strain. The Synbiotics ALV-J Antibody ELISA is able to detect a broader range of ALV-J isolates while maintaining sensitivity levels equivalent to that of the VN.

Table 2. Specificity and Sensitivity.
Comparison of the the SBIO ALV-J ELISA test and the Virus Neutralization.

Comparison to VN Detecting ALV-J Isolates

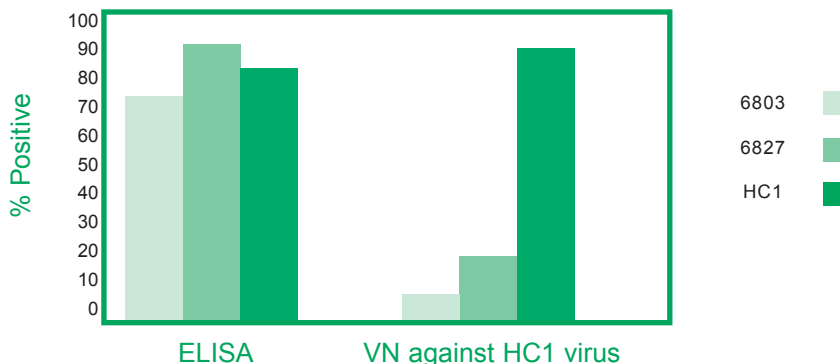


Table 3. Specificity and Sensitivity.
Comparison of the the SBIO ALV-J ELISA test and a competitor ELISA. Percent agreement between the SBIO test and actual disease status is 100%. Percent agreement between competitor's test and actual disease status is 62%.

20 samples from 8 flocks, clinically sick with ALV-J were tested for antibodies to ALV-J virus using the Synbiotics kit and a competitor's ELISA kit. All flocks tested positive for P27 antigen, using albumin samples.

Number of Flocks	Competitor ELISA	SBIO ALV-J ELISA	Flock Disease Status
5	+	+	+
3	-	+	+
Total Flocks	8	8	8

Interpreting Results

Evaluate Synbiotics ALV-J ELISA results using the following guidelines:

1. Determine the number of samples considered non-reactive or positive using the ranges listed in the table below. Note: Use ProFILE's Plate Statistics Report or +/- Summary Report to determine the sample status.

Antibody Status	SP Range	Titer Range
Non-Reactive (-)	Less than 0.400	0
Positive (+)	0.400 and greater	2360 and greater

2. Use the following guidelines to establish ALV-J antibody flock status. Please note that the ELISA is a flock test and flock decisions should not be made on individual samples or very small flock samples (i.e. less than 10 samples / flock).

ELISA Results	Presumed Flock Status	Recommended Action
a. 10% or fewer birds within a flock are positive	No antibody to ALV-J	None. Monitor on an ongoing basis (e.g. every 4-6 weeks).
b. 10% - 15% of birds within a flock are positive	Antibody to ALV-J suspected	Flock ALV-J status should be confirmed with additional serological tests and virus isolation. Monitor flock closely.
c. 15% or more of the birds within a flock are positive	Flock considered presumptive positive for ALV-J Antibody	

References

1. Payne, L.N., S.R. Brown, N. Bumstead, K. Howes, J.A. Frazier, and M.E. Thouless. (1991). A Novel Subgroup of Exogenous Avian Leukosis Virus in Chickens. J. Gen. Virol. 72:801-807.
2. Bai, J.L., N.Payne, and M.A. Skinner (1995). HPRS-103 (Exogenous avian leukosis virus, subgroup J) has an Env Gene Related to Those of Endogenous Elements EAV-0 and E51 and an E Element Found Previously Only in Sarcoma Virus. J. Gen. Virol. 69:779-784.
3. Venugopal, K., K. Howes, G.S. Barron and L.N. Payne (1997). Recombinant env-gp85 of HRP-103 (subgroup J) Avian Leukosis Virus: Antigenic Characteristics and Usefulness as a Diagnostic Reagent. Avian Dis. 41:283-288.
4. Lamichhane, C.M., A. Fadley, L. Lee, L. Jerome, B. Adenikinju (1998). Development of Avian Leukosis Virus Subgroup J Specific Antibody ELISA. Proceedings of Fourth Asia Pacific Poultry Health Conference, Australian Veterinary Poultry Association, Melbourne, Australia, Nov. 22-26, 1998.