



## Senecavirus A Antibody Test Kit, ELISA

Swinecheck® SVA bELISA

Product code: TRM-567 (2 plates)

- ✓ **Highly sensitive ELISA kit**
- ✓ **A shelf life of 24 months**
- ✓ **Approved by the Canadian Food Inspection Agency**

### INTRODUCTION

Senecavirus A (SVA) belongs to the same family, Picornaviridae, as foot-and-mouth disease virus (FMDV) and swine vesicular disease virus (SVDV). SVA was first isolated as a contaminant in cell culture media in 2002. Subsequently it has been associated with idiopathic vesicular disease in swine in Brazil, USA, Canada, Thailand, and China. It has also been involved in systemic diseases in piglets in Brazil, USA, and Canada.

Since SVA causes lesions similar to FMDV, it is considered an important differential diagnosis and therefore diagnostic assays for SVA are routinely carried out on samples from pigs with vesicular lesions or piglets with systemic disease.



The detection of SVA antibodies in serum samples is usually performed using the virus neutralization test (VNT) or the immunofluorescence antibody test (IFAT). The present assay was developed to have a more convenient assay to facilitate serological surveillance of SVA infections.

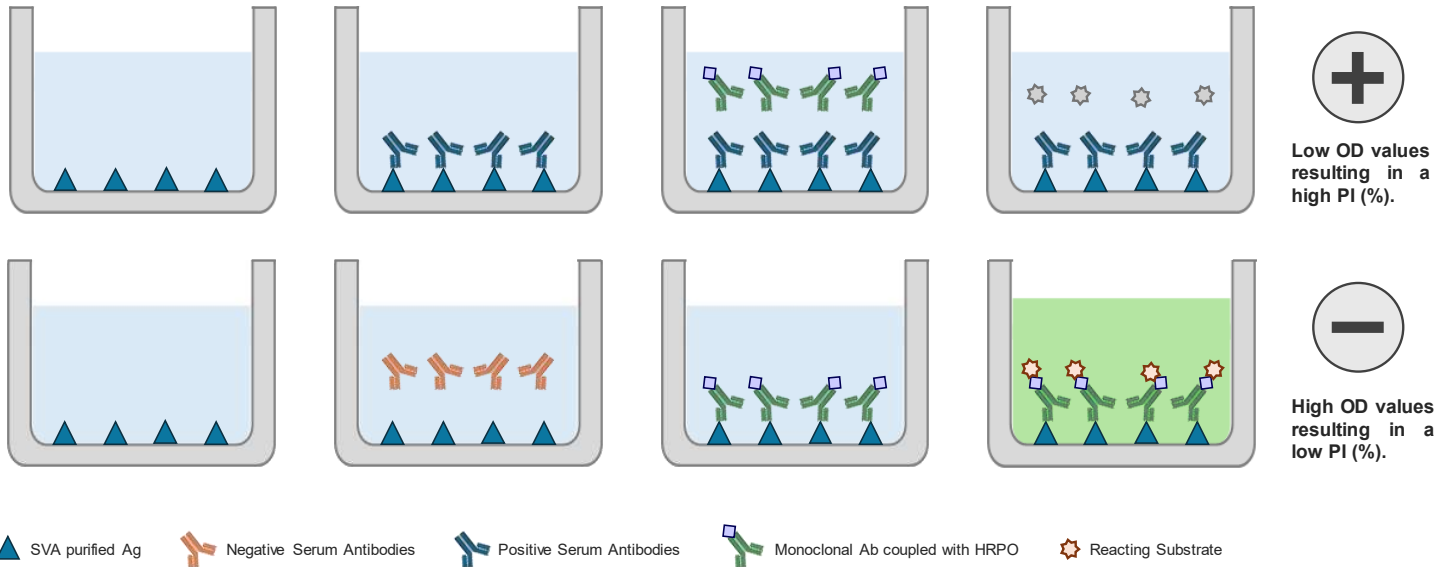
### INTENDED USE

Senecavirus A Antibody Test Kit developed by Biovet is a blocking ELISA (bELISA) which allows the detection of antibodies against SVA. It has been approved by the Canadian Food Inspection Agency (CCVB file number 780DR/S2.0/D10) in 2019.

## PRINCIPLE OF THE TEST

### a. Assay description

1. The wells are coated with a purified Ag of SVA.
2. Samples are added and incubated for 1 hour at  $23 \pm 2^\circ\text{C}$ . Each well is then washed carefully to remove unbound material.
3. An anti-SVA monoclonal antibody conjugated with HRPO is added and incubated for 30 min at  $23 \pm 2^\circ\text{C}$ . Washing steps follow.
4. The substrate is added and incubated for 15 min at  $23 \pm 2^\circ\text{C}$ . It will react with HRPO if present. The reaction is stopped, and OD values are measured.



### b. Results interpretation

OD values are used to calculate the Percent Inhibition (PI) as follow:

$$\text{PI (\%)} = 100 - \left( \frac{\text{OD}_{\text{sample}}}{\text{mean OD}_{\text{neg}}} \right) \times 100$$

The status of a test sample is determined with the PI.

Result	PI (%)
Negative	Less than 50%
Positive	Greater or equal to 50%

The following criteria must be met in order to validate the test:

- OD of the Negative Control must be higher than 0.800.
- Positive Control PI must be between 60 – 99%.

## TECHNICAL DATA

### a. Sensitivity & Specificity

A panel of a hundred (100) samples originating from pigs experimentally or naturally infected with SVA and 255 porcine samples from various Canadian herds presumed free from SVA were tested with the reagents of a pre-licensed kit serial.

	Infected pigs	SVA free herds	Total	Statistic	Value	95% CI
<b>Biovet +</b>	100	3	<b>103</b>	<b>Relative sensitivity</b>	100.0%	96.3% to 100.0%
<b>Biovet -</b>	0	252	<b>252</b>	<b>Relative specificity</b>	98.2%	96.7% to 99.7%
<b>Total</b>	<b>100</b>	<b>255</b>	<b>355</b>			

The Swinecheck® SVA bELISA detected all experimentally and naturally infected pigs, and correctly differentiated negative samples, except for 3 samples that had a PI between 50 and 55% (data not shown).

### b. Stability

The stability of the kit was evaluated with a panel of 6 samples, including 3 negatives, 2 positives and 1 strong positive. Samples were tested with 3 serials of the Swinecheck® SVA bELISA that had been stored at 4-8°C for 25 months. Results presented are the PI (%) from the 3 serials.

Samples	Reactivity	Serial A		Serial B		Serial C	
		0 month	25 months	0 month	25 months	0 month	25 months
<b>Pos Ctrl</b>	<b>Positive</b>	96,06	97,22	96,81	97,79	96,40	97,42
<b>CQ # 887</b>	<b>Negative</b>	10,34	7,89	0,00	19,22	9,46	10,62
<b>CQ # 889</b>	<b>Negative</b>	21,94	19,92	11,67	18,26	5,12	13,02
<b>CQ # 893</b>	<b>Negative</b>	2,05	16,40	-6,98	11,78	-13,79	5,96
<b>CQ # 878</b>	<b>Positive</b>	81,76	83,88	81,16	82,87	81,67	76,68
<b>CQ # 879</b>	<b>Positive</b>	76,02	76,73	73,47	76,99	75,40	76,68
<b>CQ # 874</b>	<b>Strong Pos.</b>	98,46	98,35	98,17	98,44	98,13	98,36

The PI remained stable throughout the study, and no changes in result outcomes were observed illustrating the kit's great stability.

### c. Repeatability

The intra plate repeatability was evaluated using 7 samples with a reactivity ranging from negative to strongly positive. Each sample was tested 4 times in a pre-licensing serial of the kit. The inter plate study was conducted the same way with 4 plates and a different panel of 4 samples. Mean and standard deviation of ODs were used to calculate the Coefficient of Variation (CV).

#### A – Intra plate ODs

Sample ID	Well 1	Well 2	Well 3	Well 4	Mean ± SD	CV (%)
Pos Ctrl.	0.030	0.031	0.031	0.029	0.030 ± 0.001	3.2
Neg Ctrl.	1.528	1.534	1.477	1.511	1.513 ± 0.026	1.7
Panel no.3	0.064	0.070	0.085	0.060	0.070 ± 0.011	15.7
Panel no.6	0.424	0.422	0.451	0.421	0.430 ± 0.014	3.3
Panel no.9	0.639	0.648	0.654	0.687	0.657 ± 0.021	3.2
Panel no.10	0.662	0.707	0.714	0.719	0.701 ± 0.026	3.7
Panel no.13	1.023	1.019	1.068	1.155	1.066 ± 0.063	5.9
Panel no.16	1.273	1.305	1.299	1.383	1.315 ± 0.047	3.6
Panel no.18	1.285	1.299	1.34	1.367	1.323 ± 0.038	2.8

#### B – Inter plate ODS

Sample ID	Plate 1	Plate 2	Plate 3	Plate 4	Mean ± SD	CV (%)
Pos Ctrl.	0.036	0.031	0.029	0.033	0.032 ± 0.003	9.3
Neg Ctrl.	1.482	1.489	1.402	1.542	1.479 ± 0.058	3.9
Panel no.10	0.652	0.672	0.679	0.711	0.679 ± 0.025	3.6
Panel no.13	1.084	1.095	1.080	1.134	1.098 ± 0.025	2.2
Porc T 1/2	1.558	1.499	1.499	1.560	1.529 ± 0.035	2.3
Pos SVA	0.031	0.030	0.032	0.033	0.032 ± 0.001	4.1

The results demonstrate the Swinecheck® SVA bELISA kit's high repeatability. Only one sample, a strong positive with low OD values, had a CV over 15% in both studies.

### CONCLUSION

The Swinecheck® SVA bELISA test kit has demonstrated suitable performances in terms of repeatability, sensitivity, specificity, and stability.

**KIT COMPOSITION**

Components	Quantity
12 x 8 wells strips coated with purified SVA	2
Ready-to-use Positive Control	1.5 mL
Ready-to-use Negative Control	1.5 mL
Ready-to-use Sample Dilution Buffer	30 mL
Ready-to-use Conjugate Dilution Buffer	30 mL
Concentrated Wash Solution (10X)*	2 x 100 mL
Concentrated Conjugate HRPO-labeled anti-SVA mAb (20X)	1.25 mL
Ready-to-use Substrate	25 mL
Ready-to-use Stop Solution	25 mL



CFIA-licensed FEO; 780DR/S2.0/D10

For more info, contact us at: 1-888-824-6838, option 3  
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