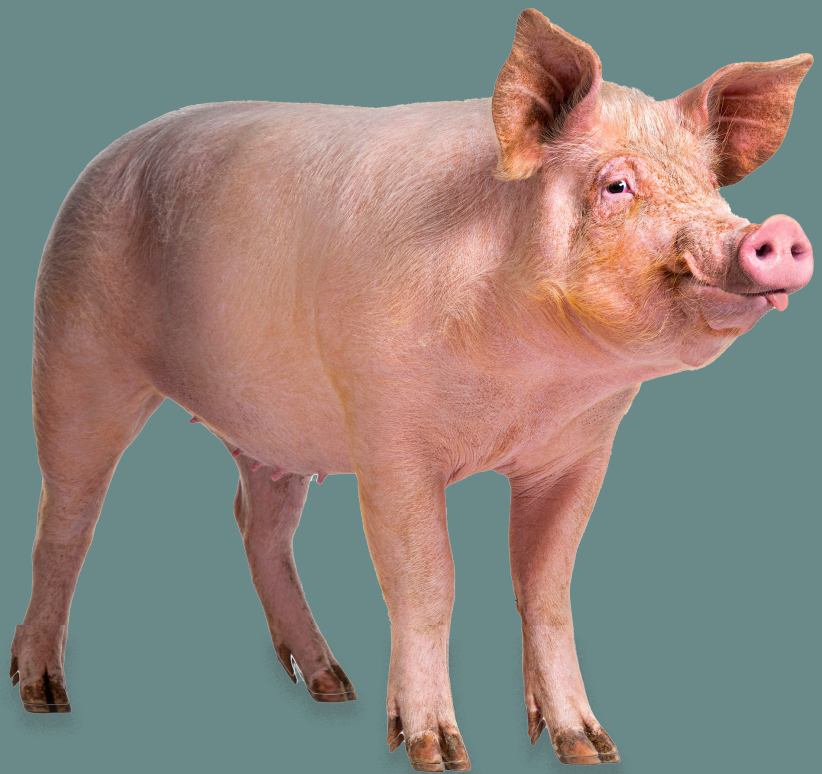


CLARITY, CONTROL, and CONFIDENCE in App management

Biochek's Smart ELISA System for
Actinobacillus pleuropneumoniae



BioChek

SMART VETERINARY DIAGNOSTICS

BioChek App OmpA and ApxIV Antibody ELISA's

BioChek App OmpA Ab ELISA

- ✔ Detection of active- and passive OMP antibodies of all App serotypes on endemic farms
- ✔ Via herd profiling assessment of the presence passive (MDA) and active antibodies
- ✔ Timing of an App vaccination and confirmation of successful vaccination

BioChek App ApxIV Ab ELISA

- ✔ Detection of active- (infection) and passive antibodies against App ApxIV of all serotypes.
- ✔ Use in screenings and monitor programs - status (SPF) monitor
- ✔ Via herd profiling detection of infection moment and groups.
- ✔ Combined with the BioChek App OmpA Ab ELISA serological evaluation of App vaccine take

Actinobacillus pleuropneumoniae (App)

App is responsible for causing pleuropneumonia in susceptible pigs. The pathogen is present on most swine farms worldwide. The disease is caused by a combination of pathogenic toxins (ApxI and/or ApxII and/or ApxIII) which are produced after the attachment of the bacteria on the epithelium. 19 serotypes are described who vary in toxin pattern. The outer membrane protein (OMP) needed for attachment on the epithelium is present in all serotypes. The “apathogenic” ApxIV toxin is only formed after infection due to all serotypes (1).

App serotypes	ApxI	ApxII	ApxIII	ApxIV *	OMP **
1	X	X		X	X
2		X	X	X	X
3		X	X	X	X
4		X	X	X	X
5a	X	X		X	X
5b	X	X		X	X
6		X	X	X	X
7		X		X	X
8		X	X	X	X
9	X	X		X	X
10	X			X	X
11	X	X		X	X
12		X		X	X
13		X		X	X
14	X			X	X
15		X		X	X
16	X	X		X	X
17		X		X	X
18		X		X	X

*: Only induced after field infections. No cross reaction with other pathogens

** : Antibodies induced after field infection and vaccination.

ApxI, -II, -III and OMP: some/slide cross reaction possible with Gps (Hps), A.Rosii, A.porcinosilarum, A.Suis, Pasteurellae

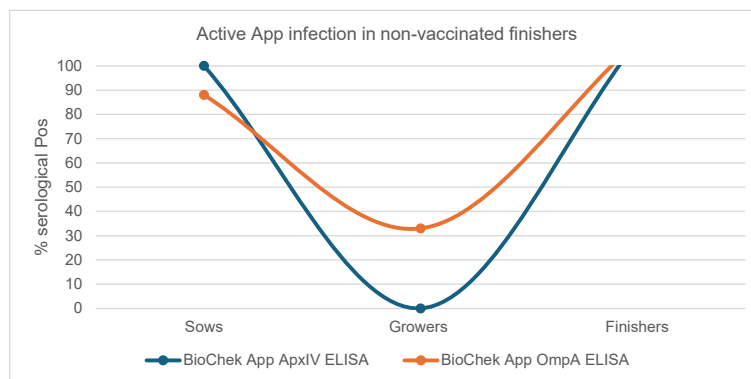
App | *Actinobacillus pleuropneumoniae*

Diagnosis

An individual diagnosis can be made via necropsy of affected pigs which shows a pleuropneumonia including a positive App containing PCR or culture for *Actinobacillus pleuropneumoniae* out of the lesion.

Detection of the pathogen in oral fluids or tonsil swabs only detects the carry status of the pigs. A herd diagnosis on live pigs can be made by detecting the infection via paired sampling or checking the cross sectional profile with a serotype independent screening test based on the OMP and/or the ApxIV toxin (Graph 1).

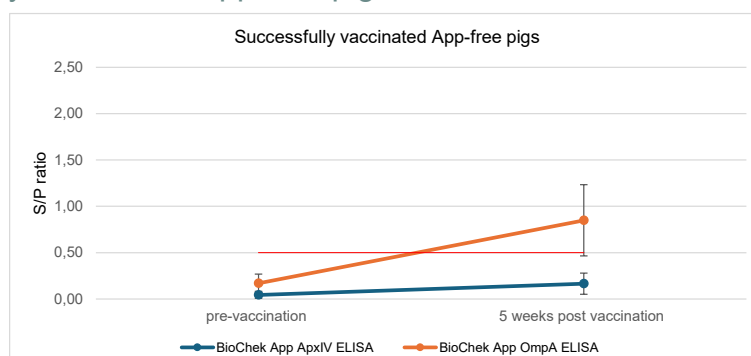
Graph 1. Active App infection in non-vaccinated finishers



Immunity, protection and prevention

Protective immunity is provided by antibodies directed against the OMP protein to reduce/prevent attachment to the epithelium and the pathogenic toxins (I,II,III). App vaccines are often based on bacterins or subunits containing OMP. Since maternal derived antibodies against OMP and the pathogenic toxins can protect and thus block the vaccination of young pigs the BioChek App OmpA ELISA can be used for timing and monitor the vaccine response. Combined with the BioChek App ApxIV ELISA a vaccine marker system is provided (Graph 2).

Graph 2. Successfully vaccinated App-free pigs





BioChek App OmpA Antibody Test Kit | KIT6071

Description of the test

Actinobacillus pleuropneumoniae OmpA Antibody Test Kit (App OmpA Ab ELISA) will measure the amount of antibodies against Actinobacillus pleuropneumoniae OMP protein (all serotypes) in the serum of pigs. Microtiter plates have been pre-coated with purified App OmpA antigens. Maternal derived antibodies and antibodies due to natural infection or most vaccination will be detected.

The test results will be presented in a semi-quantitative manner allowing for differentiation between negative, low, moderate and high serological responses.

BioChek App OmpA Ab ELISA

Key performance features

- Sensitivity: $\geq 99\%$
- Specificity: $\geq 96\%*$

** In pigs from 4 weeks until 24 weeks of age. In older pigs some cross reactions can occur due to contact with other possible endemic bacteria from the HAP group (Hps (Gps), Actinobacillus suis, -Rosii, -porcinotonsillarum, Pasteurella's)*

Kit specifications

- 5 plates per kit
- Indirect ELISA
- Run at room temperature
- Test Protocol: 30-30-15
- Read at: 405NM
- 1:70 dilution
- Shelf life: 1 year from date of manufacture

Reference control (product code SR700) available:

A reference control ensures that the test results are valid and reproducible. This control needs to be ordered separately as it is kit batch independent.

Interpretation BioChek App OmpA Ab ELISA's test results and recommendations

General interpretation guideline BioChek APP OMP Ab ELISA

	No vaccination	BioChek App OMP ELISA (S/P and titer)		(OMP containing) Vaccination	
Not detectable	Negative	< 0,5	≤ 1.070	Negative	No active response measured
Infection*	Low	0,5	1.071	Low	Possible vaccination response
	Moderate	1	2.300	Moderate	
		1,5	3.600		
		2	4.900		
	High	2,5	6200	High*	Vaccination response with antibody boosting due to filed virus contact*
		3	7.600		
		3,5	9.100		
Very high	4	10.500	Very high		
	≥ 4.5	≥ 12.000			



BioChek App ApxIV Antibody Test Kit | KIT6072

Description of the test

Actinobacillus pleuropneumoniae ApxIV Antibody Test Kit (App ApxIV Ab ELISA) will measure the amount of antibodies against Actinobacillus pleuropneumoniae ApxIV toxins (all serotypes) in the serum of pigs. Microtiter plates have been pre-coated with purified App ApxIV antigens.

Maternal derived Antibodies and antibodies due to natural infection will be detected.

The test results will be presented in a semi-quantitative manner allowing for differentiation between negative, low, moderate and high serological responses.

BioChek App ApxIV Ab ELISA

Key performance features

- Sensitivity: $\geq 99\%$
- Specificity: $\geq 99\%$

Kit specifications

- 5 plates per kit
- Indirect ELISA
- Run at room temperature
- Test Protocol: 30-30-15
- Read at: 405NM
- 1:70 dilution
- Shelf life: 1 year from date of manufacture

Reference control (product code SR700) available:

A reference control ensures that the test results are valid and reproducible. This control needs to be ordered separately as it is kit batch independent.

Interpretation BioChek App ApxIV Ab ELISA's test results and recommendations

General interpretation guideline BioChek App ApxIV ELISA (no response on vaccination)

No vaccination / vaccination	BioChek App ApxIV ELISA (S/P and titer)		
Not detectable	< 0,5	≤ 1.070	Negative
	0,5	1.071	Low
Infection*	1	2.300	Moderate
	1,5	3.600	
	2	4.900	High
	2,5	6.200	
	3	7.600	
	3,5	9.100	Very High
	≥ 4	> 10.500	

Since 1997, BioChek has been supporting the poultry and swine industries to help improve livestock productivity and promote animal health. BioChek's extensive portfolio of veterinary diagnostics is used worldwide to detect a wide range of poultry and swine diseases.

Our head office is based in the Netherlands, and we have an R&D department and production facility in the UK, a USDA-licensed facility in the USA, a regional office in South Africa, regional and local sales teams, and numerous distributors across the globe.

BioChek Animal Health Monitoring System

- ELISA & PCR diagnostic test kits
- Reference controls (ELISA)
- Extraction Solutions and Standards (PCR)
- BioChek Monitoring Software
- BioChek ELISA Assay Robot (BEAR)
- RoboPrep nucleic acid extraction robot
- Dedicated Technical & Logistics Support



Scan for information or contact us:
info@biochek.com
+31 (0) 182 582 592
www.biochek.com

 **BioChek**
SMART VETERINARY DIAGNOSTICS