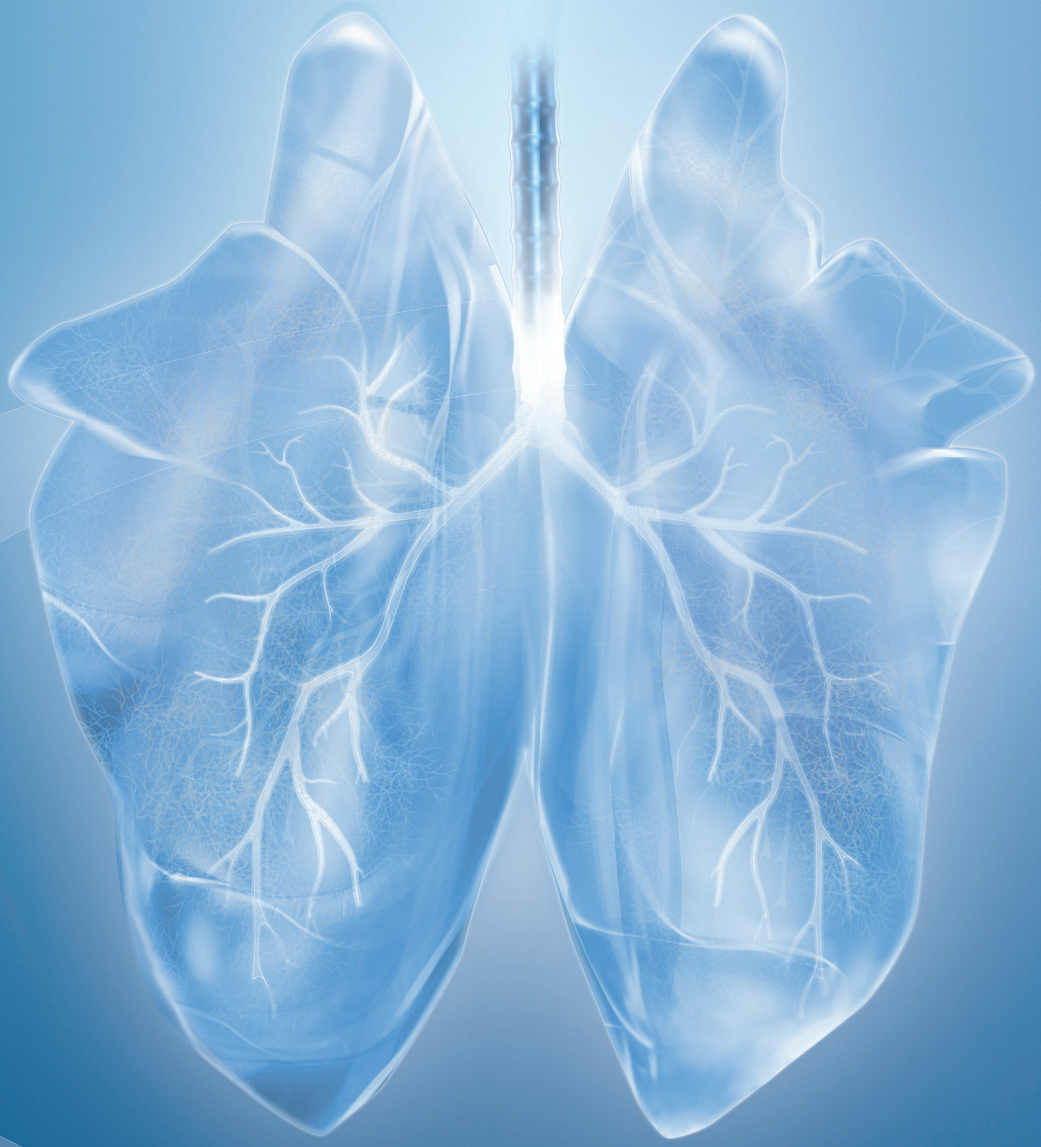
COGLAPIX®

SWINE PLEUROPNEUMONIA



Gain without pain!

LUNG PROGRAM

ceva

Cross protection is a necessity in the prevention of *Actinobacillus pleuropneumoniae*

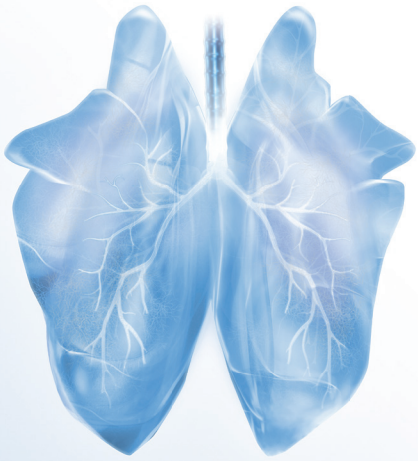
Ease of transmission, high mortality outbreaks, frequent subclinical disease and negative impact on growth make *Actinobacillus pleuropneumoniae* (*A.p*) an important pathogen on today's pig farms.

We may initially observe a cough, dyspnoea and fever, but the painful pleuritis associated with an *A.p* infection has a prolonged affect on the performance of the pig.

With 15 serotypes possessing different combinations of Apx toxins, cross protection is a necessity for the prevention of *A.p.* At the same time, it is important to ensure that growth performance is not affected while the pig is developing protection against *A.p.*

COGLAPIX® provides cross-serotype protection against *Actinobacillus pleuropneumoniae*.

This effective protection, without-post vaccination reactions gives each pig the ability to breathe easily and therefore gain without pain!



COGLAPIX®

The vaccine which offers protection from *Actinobacillus pleuropneumoniae (A.p)*.

Coglapix® expresses all 3 Apx toxins in addition to somatic antigens of *A.p.*

Strains of serotypes 1 and 2 are used for the production of Apx toxins.

Coglapix® elicits a strong immune response to Apx toxoids. Vaccinated rabbits seroconverted with significant titers of anti Apx antibodies two weeks after booster[1].

ELISA titers of APXI, II and III specific antibodies

ApxI titer (EU/ml)	ApxII titer (EU/ml)	ApxIII titer (EU/ml)
50.9	19.2	10.0

Among somatic antigens, LPS's are of high importance in terms of immunogenicity. However the content of LPS's must be well controlled, since LPS's as endotoxins may be responsible for adverse side effect of vaccines.

Apx toxoids with a controlled amount of LPS provide the most efficient yet safe protection against pleuropneumonia caused by *Actinobacillus pleuropneumoniae*.

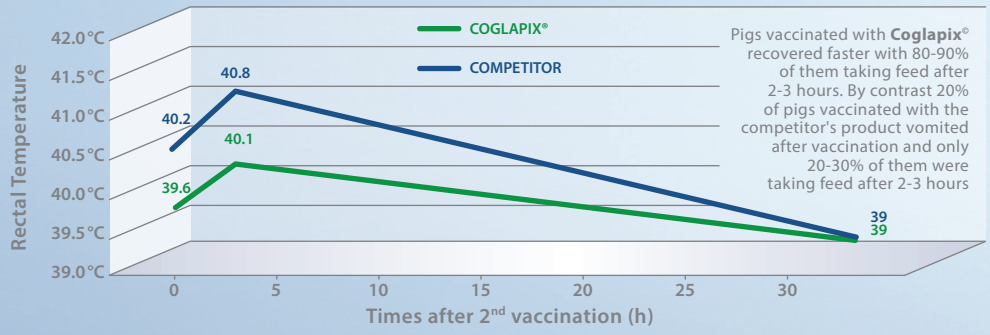
Gain without pain!

Gain without pain

A vaccine with **faster recovery** characteristics.

Pig recovery was investigated under field conditions in trials comparing **Coglapix®** with a competitor's subunit toxoid-OMP vaccine. Even after administering the second vaccination, there was only a mild elevation of body temperature after vaccinating with **Coglapix®**. When compared to the competitor, animals vaccinated with **Coglapix®** had statistically significant lower rectal temperatures at 1 and 3 hours after injection[2].

Lower post vaccinal reaction



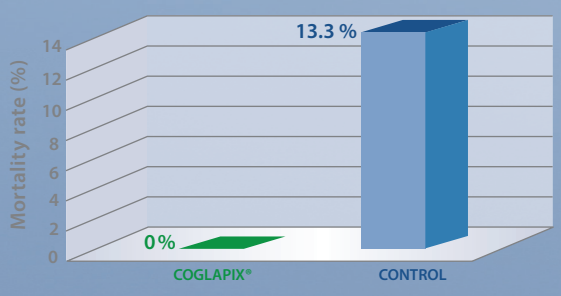
With **Coglapix®**, pigs eat while developing immunity.

COGLAPIX® **Long duration** of protection.

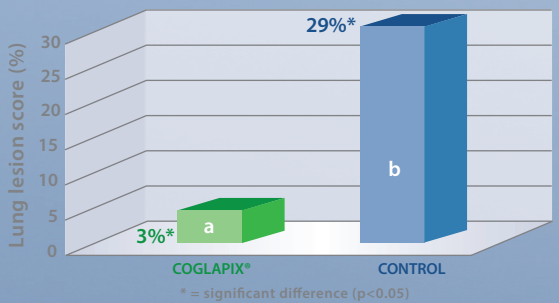
On modern farms, it is important to guarantee the clinical protection against *Actinobacillus pleuropneumoniae* until the end of the fattening period. Therefore the duration of protection was evaluated for Coglapix®.

Susceptible pigs were included in challenge studies. Half of them were vaccinated twice with a 2 ml IM dose of Coglapix®, at 3 week intervals, the others remained as controls. At 16 weeks and 24 weeks after the 2nd vaccination, pigs were challenged by intranasal route with *A.p* serotype 1, 2 or 7.
As an example, **results of the serotype 7** challenge (5 x 10^7 cfu/pig) performed on 61 '7 week old pigs' have been published, the results of which are set out below[3]

A.p. serotype 7: **Mortality**
(24 weeks post vaccination)



A.p. serotype 7: **Lung lesion scores**
(24 weeks post vaccination)



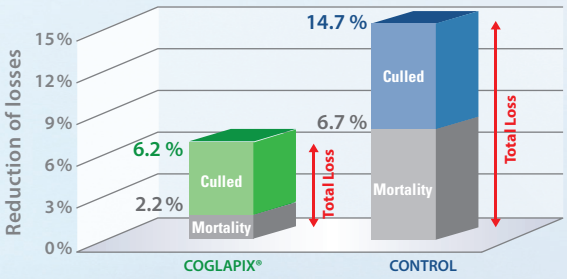
* = significant difference ($p<0.05$)

Coglapix® vaccine conferred long protection against heavy serotype 7 challenges until 34 weeks of age, when assessing the major efficacy parameters in laboratory conditions.

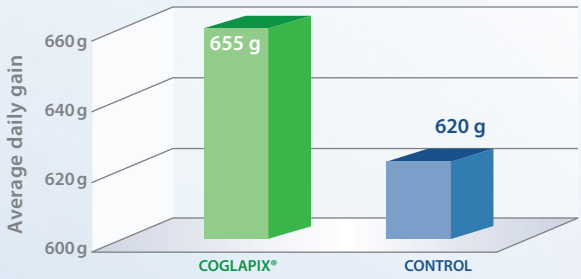
16% higher profit in Coglapix® vaccinated pigs compared to unvaccinated control in farm conditions.

The effective vaccination of pigs in the nursery against *Actinobacillus pleuropneumoniae* with **Coglapix®** significantly helps to reduce losses caused by morbidity, mortality and growth depression. On a farm with a confirmed history of *A.p*, a group of 493 pigs vaccinated with **Coglapix®** was compared to the control group of 461 non-vaccinated pigs[4].

Nearly 10 % of animals saved



35 grams more per animal every day



Lower mortality and higher growth rate resulted in cumulative 16 % higher gross revenue per pig in the **Coglapix®** vaccinated group.

ceva LUNG PROGRAM

Coglapix® is part of the Ceva Lung Program. The Ceva Lung Program provides an overview of the diseases associated with *Actinobacillus pleuropeumoniae* and *Mycoplasma hyopneumoniae*.

It offers the methodology and guidelines on how to correctly evaluate the presence, incidence and circulation patterns of these diseases. Looking at the impact of these infections using serological investigation and an adapted lung scoring of slaughter pigs, it is used to determine the appropriate vaccination protocol and monitor the results of vaccination with Coglapix® and Hyogen®. The program is supported by key opinion leaders and is an asset for building Ceva's reputation as experts in respiratory health.

Evaluation of pneumonia and pleurisy

Pneumonia and pleurisy can be evaluated in a qualitative and quantitative manner. In the Ceva Lung Program, pneumonia is scored based on the Madec method, which has been modified considering the contribution of each lobe to the overall capacity of the lungs. Quantification of scarring is included.

Pleurisy is scored using the Slaughterhouse Pleurisy Evaluation System (SPES) method, although in the Ceva Lung Program only cranial pleurisy is recorded separately as Cranial Pleurisy Scoring. Dorso-causal pleurisy (associated with ***Actinobacillus pleuropneumoniae*** infection) is assessed separately and this score is used to calculate the APPI (*Actinobacillus Pleuropneumoniae* Index).

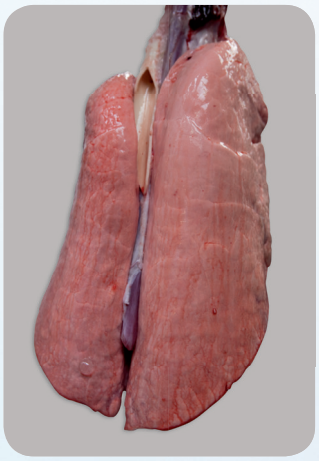
Dorsocaudal Pleurisy based on SPES

The SPES method facilitates the assessment of pleural lesions according to their location, appearance and extension. The SPES method is based on a point system from 0 to 4 based on the presence, the extension and position of pleurisy observed on both lungs of each animal directly on the slaughter line.

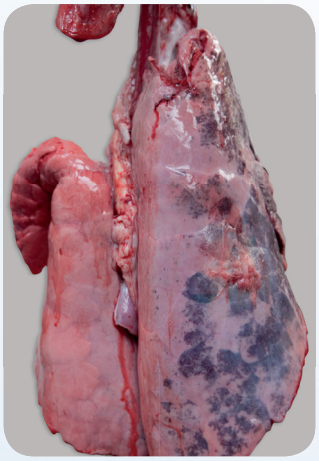
> Table 1: Modified SPES grid for chronic pleuritis score

Score	Lesion characterisation
0	Absence of chronic pleurisy lesions
2	Dorso-caudal monolateral focal lesion
3	Bilateral lesion of type 2 or extended monolateral lesion (at least 1/3 of one diaphragmatic lobe)
4	Severely extended bilateral lesion (at least 1/3 of both diaphragmatic lobes)

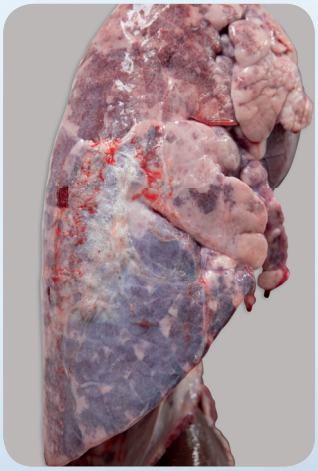
Note: Cranio-ventral lesions previously associated with SPES score 1 is now recorded as cranial pleurisy



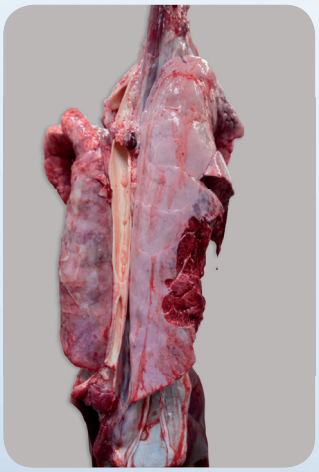
Score 0



Score 2



Score 3



Score 4

< Fig 7: Pig lungs on the slaughter line. Score 2, 3 and 4 lesions

Note the characteristic "stripping" in score 4 due to the tenacious adhesions between the parietal and visceral pleura with resulting laceration of the pulmonary tissue during the slaughter operations.

Actinobacillus Pleuropneumoniae Index (APPI)

The Actinobacillus Pleuropneumoniae Index (APPI) provides information regarding the prevalence and seriousness of the dorso-caudal pleurisy, highly indicative of prior pleuropneumonia due to A.p

> APPI =

Frequency of the lesions attributable to *A.p* (number of lungs with scores 2, 3, and 4/total number of lungs examined)* average score (considering score 2,3,4) attributable to *A.p*

For example:

in the case where 10 lungs were evaluated with the following scores: 0,0,0,0,2,2,2,3,3,4, the frequency of the lesions attributable to *A.p* is thus obtained by applying the previous formula (6/10)*((2+2+2+3+3+4)/6) = 1.6

According to the original SPES method, a high level of correlation was found between the A.p seropositivity of herds and the SPES value.

This confirms the specificity of recording of the dorso-caudal pleurisy for previous A.p infections.

COGLAPIX®

SWINE PLEUROPNEUMONIA

LUNG PROGRAM

Gain without pain!

- Cross-serotype protection against *Actinobacillus pleuropneumoniae*
- Expresses ApxI, ApxII and ApxIII toxoids
- Sustained growth performance following vaccination[2]
- Ceva Lung Program and Respinomics on farm support

CLP3 L256-1115-250

References: **1.** Thevenon J et al. 2014 ESPHM. **2.** Ceva internal data. **3.** Tenk M et al. 2013 APVS. **4.** Krejci R et al. 2011 APVS.

ACTIVE SUBSTANCE: Actinobacillus pleuropneumoniae serotype 1(strain NT3) and Actinobacillus pleuropneumoniae serotype 2(strains PO, U3, B4, SZ II) expressing ApxI toxoid min. 28.9 ELISA unit / ml*, ApxII toxoid min. 16.7 ELISA unit / ml and ApxIII toxoid min. 6.8 ELISA unit / ml. **CONTRAINDICATIONS:** None. **SPECIAL WARNING FOR EACH TARGET SPECIES:** No information is available on the efficacy of the vaccine in animals with maternally derived antibodies. However, these antibodies are usually not present in piglets at the age of vaccination. **SPECIAL PRECAUTIONS FOR USE IN ANIMALS:** Administer to healthy animals only. **SPECIAL PRECAUTIONS TO BE TAKEN BY THE USER:** In case of accidental self-injection, seek medical advice immediately and show the package leaflet or the label to the physician. **ADVERSE REACTIONS:** Adverse reactions to the vaccine include:a transient and mild swelling of maximum 2x3.2 cm is very common at the site of injection, persisting for at least 8 days. body temperature commonly increases of up to 1.8°C for 2 hours on days 1 or 2 after vaccination. Vaccinated pigs may show signs of prostration for a few hours after vaccination, however, this is uncommon. **USE DURING PREGNANCY OR LACTATION:** Do not use during pregnancy and lactation. **INTERACTION WITH OTHER MEDICINAL PRODUCTS:** No information is available on the safety and efficacy of this vaccine when used with any other veterinary medicinal product. A decision to use this vaccine before or after any other veterinary medicinal product therefore needs to be made on a case by case basis. **AMOUNTS TO BE ADMINISTERED AND ADMINISTRATION ROUTE:** For intramuscular use, preferably in the neck region. Dose: 2ml. Vaccination schedule: 2 doses administered to animals from 7 weeks of age with an interval of 3 weeks between doses. Shake well before use. Use sterile syringe and needle, respect aseptic conditions of vaccination. **OVERDOSE (SYMPTOMS, EMERGENCY PROCEDURES,ANTIDOTES), IF NECESSARY:** Administration of a double dose caused no other reactions than those described in 4.6 (adverse reactions); however, severity of the signs was increased e.g. transient and mild swelling of maximum 3x3 cm at the site of injection, regressing but persisting for at least 14 days; body temperature increases of up to 2.6°C for 2 hours on days 1 or 2 after vaccination. **WITHDRAWAL PERIOD(S):** Zero days. **LEGAL CATEGORY:** UK: POM-V IE: POM **MARKETING AUTHORISATION:** UK: Vm 15052/4075 IE: VPA 10815/030/001.

Hyogen contains Inactivated Mycoplasma hyopneumoniae 2940 strain. **LEGAL CATEGORY:** UK: POM-V IE: POM **MARKETING AUTHORISATION:** UK: 15052/4078 IE: VPA 10815/026/001.
Further information is available on the SPC.

Use medicines responsibly (www.noah.co.uk/responsible)

Advice should be sought from your prescribing veterinary surgeon.

Ceva Animal Health Ltd
Unit 3, Anglo Office Park, White Lion Road, Amersham, Bucks HP7 9FB
Tel: 01494 781510 **www.ceva.co.uk**

ceva