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Thank you to **IDEXX Laboratories** for their financial support to reproduce the conference proceeding book.

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CD-ROM

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Logo Design

Ruth Cronje, and Jan Swanson;
based on the original design by Dr. Robert Dunlop

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RAPID ONSET OF PROTECTION OF TWO WEEKS FOR A NOVEL ONE DOSE MYCOPLASMA VACCINE

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Introduction

Mycoplasma hyopneumoniae (M.hyo) is the primary pathogen of enzootic pneumonia, an economically important and globally highly prevalent pig disease. M.hyo is also considered to be one of the primary agents involved in the porcine respiratory disease complex (PRDC) (Thacker, 2006). Commercial vaccines, consisting of adjuvanted whole cell preparations are the major tool for reducing the clinical impact of the disease.

Materials and Methods

The aim of this study was to demonstrate the onset of protection for a novel inactivated M.hyo vaccine (Ingelvac MycoFLEX®) two weeks following vaccination in a validated pig challenge model. A total of fifty sero-negative commercial cross-bred pigs were allocated to one of the three groups according to table 1.

Table 1: Study design

Group	Vaccination	No	Challenge	Necropsy
A	Ingelvac MycoFLEX® at 3-4 weeks of age (Study day 0)	22	Day 14	Day 42
B	No	22	Day 14	Day 42
C	No	6	No	Day 42

All pigs of groups A and B were challenged with a virulent strain of *Mycoplasma hyopneumoniae* fourteen days following vaccination. All animals were necropsied on day 42 of the study.

The primary parameter for onset of protection was the extent of lung lesions and the extent was calculated as published by Thacker (1988). The underlying basis for this calculation is the factored weight of each lung lobe of healthy animals.

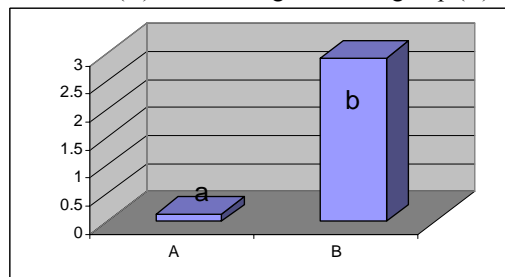
Pigs were randomized according to initial body weight to pens of 4 animals each, two piglets each for groups A and B. Animals of the strict control group (C) were housed separately.

The null hypothesis was that the 2 groups A and B were equal with regard to the extent of lung lesions. As data were not normally distributed, the data were analyzed by the Wilcoxon Mann-Whitney test. The test was designed as a two tailed-test. Differences were considered to be statistically significant if $p \leq 0.05$.

Results

As evident from graph 1 the extent of lung lesions, as measured by a factored weighed lung involvement, were significantly reduced in vaccinated animals (group A, median 0.123) as compared to challenged controls (group B, median 2.925) at day 42. This significant difference was not only true for the entire lung, but also for all individual lung lobes except the left dorsal and left apical lobes. None of the six strict control animals exhibited any lung lesion (not shown in graph), which confirms the validity of the challenge model.

Graph 1: Median factored lung lesions in the vaccinated (A) and challenged control group (B)



Different superscripts (a,b) indicate significant difference at $p \leq 0.05$

Discussion

For efficacious control of EP in modern production systems it is mandatory to have a vaccination tool available with a rapid onset of protection as well as a long duration of protection.

It has been previously shown by Ohnesorge and von Richthofen (2007) that Ingelvac MycoFLEX® has a duration of immunity of 26 weeks. Combined with the results of this study which clearly provides evidence for a rapid onset of protection of two weeks following vaccination, Ingelvac MycoFLEX® offers a protection with fast onset and prolonged duration.

References

1. Thacker, E. ; Diseases of Swine, 701-717, 2006
2. Thacker, B. et al. ; Proc IPVS 1988, p 69
3. Ohnesorge, W.C., von Richthofen, I., Proc APVS 1007, p 294