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EFFICACY OF A NEW INTRADERMAL VACCINE AGAINST *Mycoplasma hyopneumoniae* AND PCV2 INFECTION

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BACKGROUND & OBJECTIVES

MHYOSPHERE® PCV ID is a novel ready-to-use vaccine against *Mycoplasma hyopneumoniae* (*Mhyo*) and PCV2 with a single active substance. The aim of this study was to determine the efficacy (onset of immunity, OOI) against *Mhyo* and PCV2 infections in experimental challenge studies.

MATERIALS AND METHODS

The OOI for each pathogen was evaluated in independent experiments. In each experiment, 3-week-old piglets were randomly divided into two groups (vaccinated and control) at the time of vaccination. A single dose of 0.2 ml was administered intradermally to the vaccinated pigs (MHYOSPHERE® PCV ID) and the control pigs (PBS) using Hipradermic®. *Mhyo* challenge was performed intranasally on three consecutive days at 3 weeks post-vaccination with a highly pathogenic strain. Three weeks after the *Mhyo* challenge, the pigs were necropsied to evaluate lung lesions as described in the Ph. Eur.[1] . In a separate study, a PCV2b challenge was done by the intranasal route 2 weeks post-vaccination. Blood was sampled from the pigs on a weekly basis for determination of viraemia by qPCR[2]. Four weeks after the challenge, all the pigs were necropsied and the mesenteric lymph nodes, tonsils and lungs were collected for PCV2 quantification by qPCR.

RESULTS

The median percentage of lung surface affected by *Mhyo* was significantly lower in the group vaccinated with MHYOSPHERE® PCV ID (Figure 1) than in the control group ($p < 0.05$, Mann-Whitney U test).

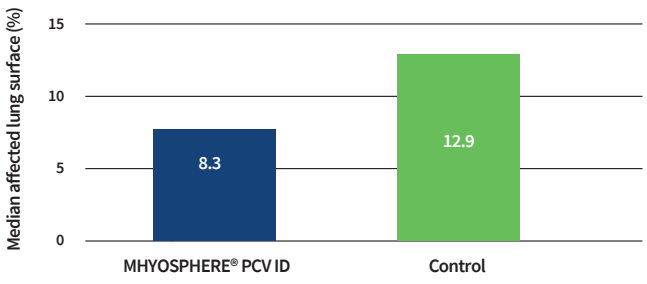

Figure 1. Percentage of lung surface affected by *Mhyo*.

The PCV2 virus load in serum was lower in the vaccinated group (Figure 2), as was the proportion of pigs positive for PCV2 by qPCR ($p< 0.05$, Mann-Whitney U test).

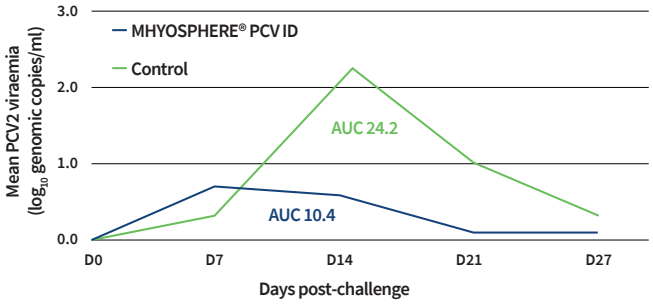

Figure 2. Area Under the Curve (AUC) of virus load in serum.

Vaccination also resulted in a significantly lower duration of viraemia (Table 1) in the MHYOSPHERE® PCV ID group ($p< 0.05$, Mann-Whitney U test).

Table 1. Length of viraemic period in serum after challenge.

Days of viraemia Mean (SEM)	MHYOSPHERE® PCV ID	Control
	6.0 (1.6)	13.0 (1.8)

The mean PCV2 tissue load (log_{10} genomic copies/ml) was significantly lower ($p< 0.05$, Mann-Whitney U test) in the vaccinated group than in the control group in tonsils (2.4 *vs* 3.5), lungs (2.1 *vs* 3.0) and mesenteric lymph nodes (1.3 *vs* 2.5).

DISCUSSION & CONCLUSIONS

The experimental challenge studies indicate that the efficacy (OOI) of MHYOSPHERE® PCV ID occurs as early as 3 weeks post-vaccination for *Mhyo* and 2 weeks post-vaccination for PCV2.

ACKNOWLEDGMENTS

The authors wish to thank HIPRA R+D staff for their technical assistance.

REFERENCES

[1]Pharmacopoeia Europaea. Monograph 04/2013:2448. Porcine enzootic pneumonia vaccine (inactivated).
[2]Olvera, A.; Sibila, M.; Calsamiglia, M.; Segalés, J. and Domingo, M. (2004). J. Virol. Methods 117: 75-80.