

DURATION OF IMMUNITY OF A NOVEL INTRADERMAL VACCINE AGAINST *Mycoplasma hyopneumoniae* AND PCV2 INFECTION

Montané, J.*[‡]; Simon-Grifé, M.[‡]; Moros, A.; Puigvert, E.; González-González, L.; Pedernera, C.; Acal, L.; Sitjà, M.

*Corresponding author (jordi.montane@hipra.com) [‡]Co-authors

HIPRA, Amer (Girona), Spain

BACKGROUND & OBJECTIVES

Mycoplasma hyopneumoniae (*Mhyo*) and PCV2 are two of the most significant infectious agents causing economic losses in the weaning to slaughter period. The aim of this study was to establish the duration of immunity (DOI) of MHYOSPHERE[®] PCV ID, an all-in-one intradermal vaccine, against *Mhyo* and PCV2 infections.

MATERIALS AND METHODS

The DOI was evaluated in independent experimental *Mhyo* (n = 22) and PCV2 (n = 14) challenge studies. Three-week-old piglets were randomly distributed into vaccinated and control groups for each experimental challenge. A single dose of 0.2 ml was administered intradermally to the vaccinated (MHYOSPHERE[®] PCV ID) and control (PBS) pigs using Hipradermic[®]. The *Mhyo* challenge was performed intranasally on three consecutive days at 23 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 22 weeks post-vaccination. Blood was sampled from the pigs on a weekly basis for determination of viraemia by qPCR². Four weeks after the challenge, all the pigs were necropsied and the mesenteric and inguinal lymph nodes, tonsils and lungs were collected for PCV2 quantification by qPCR.

RESULTS

The median percentage of lung surface affected by *Mhyo* lesions was significantly lower in the group vaccinated with MHYOSPHERE[®] PCV ID than in the control group (1.96 % vs 4.52 %, respectively; $p < 0.05$, Welch test). The distribution of the severity of lung lesions is shown in Figure 1.

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. Vaccination also resulted in a significantly lower duration of viraemia in the MHYOSPHERE[®] PCV ID group (0.0 days vs 17.1 days; $p < 0.05$, Mann-Whitney U test). 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 (0.7 vs 3.5), lungs (0.0 vs 1.3) and mesenteric (0.2 vs 1.6) and inguinal (1.1 vs 3.2) lymph nodes.

DISCUSSION & CONCLUSIONS

These results show that a single dose of MHYOSPHERE[®] PCV ID provides protection until at least 23 weeks post-vaccination for *Mhyo* and 22 weeks post-vaccination for PCV2, which are typical slaughter ages.

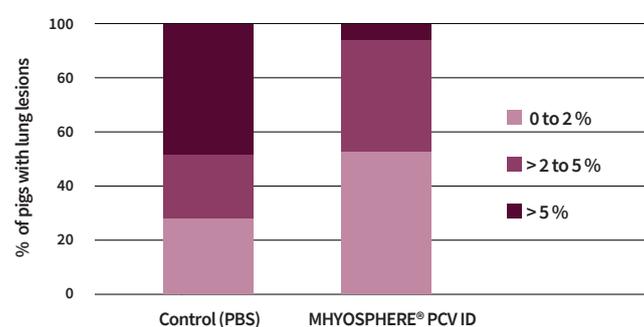


Figure 1. Distribution of the severity of *Mhyo* lesions ($p < 0.05$ for > 5 % of affected lung, Chi-square test).

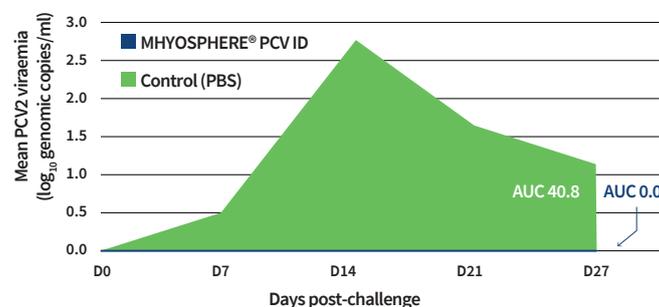


Figure 2. PCV2 viraemia (qPCR). The Area Under the Curve (AUC) was lower in the vaccinated group ($p < 0.05$, Mann-Whitney U test).

ACKNOWLEDGMENTS

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

REFERENCES

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