

Epidemiological survey of the lung lesions associated to *Mycoplasma hyopneumoniae* at the slaughterhouse in pigs vaccinated with different *Mhyo* vaccines in Spain

Jordà, R.*¹; Cantín, J.¹; Torrents, D.¹; Bernal, N.¹.
¹Hipra, Amer, Spain

*Corresponding author: ramon.jorda@hipra.com

Introduction

The assessment of lung lesions compatible with Enzootic Pneumonia (EN) at the slaughterhouse is the reference technique for assessing the effectiveness of vaccines against *Mycoplasma hyopneumoniae* (*Mhyo*). However, control of EN and so the result, may depend also on other factors like concomitant disease involved on the porcine respiratory disease complex (PRDC), environment conditions or management^{1,2}.

The aim of the study was to assess the EN-like lesions from pigs coming from farms using different vaccination *Mhyo* vaccines in Spain.

Materials & methods

30 positive *Mhyo* farms from the North-east of Spain, were randomly selected. Total amounts of 6,119 lungs were checked individually at different slaughterhouses. 19 farms (3,677 lungs) were using Mhyosphere® PCV ID (vaccine A), a new intradermal needle-free vaccine against *Mhyo* and PCV2-associated disease all in one, 6 farms (1,412 lungs) were using vaccine B, an intramuscular vaccine against *Mhyo*/PCV2 all in one, and 5 farms (1,030 lungs) were using vaccine C, an intramuscular vaccine against *Mhyo*. The study was done simultaneously between September to December 2021.

All lungs were evaluated individually at the slaughterhouse following the MADEC modified method³, with an observer-blinded system, so that, the observer didn't know which vaccine was evaluating.

For each farm, the incidence (percentage of lungs with lesion), disease index (average lesion grade of all lungs), lesion index (average lesion grade of affected lungs), and % of lung surface affected was evaluated and compared statistically amongst different vaccines. The extra cost per pig was also assessed according to the grade of lesion and the reference of Straw *et al.*⁴

Results

The incidence of EN was statistically significantly lower in farms vaccinating with vaccine A (28.31%) compared to farms using vaccine B (50.4%, $p=0.03$) and vaccine C (52.7%, $p=0.04$).

The disease index was significantly lower in farms vaccinating with vaccine A (0.46) compared to farms using vaccine B (0.91, $p=0.03$) and Vaccine C (1.15, $p=0.05$).

Table 1. Lung parameters by vaccine treatment and statistical analysis.

Parameter	Mhyosphere® PCV ID	Vaccine B	Vaccine C
N° of lungs	3,677	1,412	1,030
Incidence (%)	28,31	50,4*	52,72*
Disease index	0,46	0,91*	1,15*
Lesion index	1,61	1,79	2,18
% of Surface affected	2,71	8,67*	3,8
Extra cost/pig (€)	1,10	2,19	2,80

*Significant differences between vaccine were observed (*Mann-Whitney U test*; $p \leq 0,05$)

The distribution of the lung lesion grades (Figure 1) was different between vaccines, with higher percentage of animals without lesion (grade 0) with Vaccine A (Mhyosphere® PCV ID), which consequently affected the extra cost/pig (Table 1) being more than 2 € per pig with Vaccine B and C, and 1,10 € with Vaccine A.

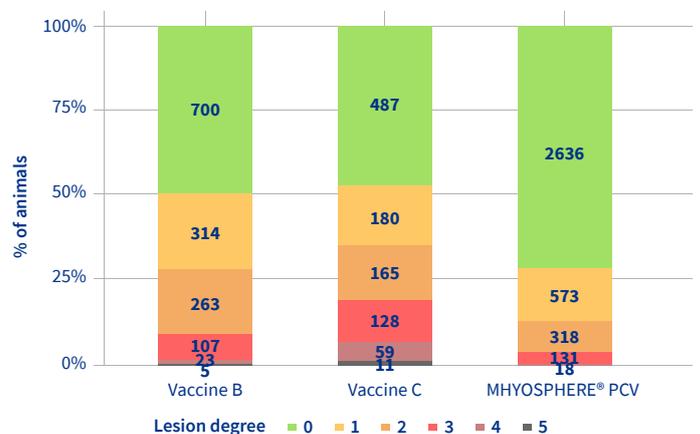


Figure 1. Distribution of the animals by lesion grade and vaccine.

Discussion and Conclusion

The farms vaccinated with Mhyosphere® PCV ID had significant lower incidence and disease index of EN compared to farms using other commercial vaccines. This study may suggest stronger *Mhyo* control in farms using this vaccine; however, other factor like environment, concomitant diseases or management should be also considered in future studies.

Acknowledgement

The authors wish to thank PROVETSA for their support and technical assistance during the trial.

References

- Pieters M. and Maes D. Chapter *Mycoplasmosis* (863-883) *Diseases of Swine*, Eleventh Edition. Edited by Jeffrey J. Zimmerman et al. (2019) John Wiley & Sons, Inc. Published 2019 by John Wiley & Sons, Inc.
- Christensen G, Sorensen V, Mousing J (1999) Diseases of the respiratory system. In: *Diseases of Swine*, 8th Edit., B Straw, SD Allaire, W Mengeling, DJ Taylor, Eds., Iowa State University Press, Ames, pp. 913e940.
- Madec F, Kobisch M (1982) *Bilan lésionnel des poumons de porcs charcutiers à l'abattoir* [Assessment of lung lesions in fattening pigs at the slaughterhouse]. Journées de la Recherche Porcine [Swine Research Conference], 14, 405e412.
- Straw BE, Tuovinen VK, Bigras-Poulin M. *Estimation of the cost of pneumonia in swine herds*. J Am Vet Med Assoc. 1989 Dec 15;195(12):1702-1706.