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Carcass quality in pigs vaccinated with Porcilis® Ileitis

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Introduction

Ileitis or Proliferative Enteropathy is caused by an obligate intracellular bacterium, *Lawsonia intracellularis*, and manifests clinically in several ways. The objective of this study was to evaluate the quality of pork meat carcasses in pigs vaccinated with Porcilis Ileitis Vs unvaccinated as a complement to the evaluation carried out during the growth of the pigs and with Ileitis challenge.

Materials and methods

The trial was conducted on a farm with 2100 sows located in the region of Antioquia (Colombia) with a history of Ileitis, diagnosed by Elisa (Svanovir® L. intracellularis/ Ileitis-Ab) and clinical signs associated with intestinal hemorrhagic syndrome at the end of the fattening. For this study, 4085 piglets were randomly selected at the beginning of the fattening phase with an average age of 75.3 days of life, which were randomly distributed in two treatments, 1942 piglets vaccinated with Porcilis Ileitis (Treatment 1) with 25 replicates and 2143 unvaccinated piglets (Treatment 2) with 30 replicates. The Porcilis Ileitis group was vaccinated at 21 days of age (weaning), while the control group was not vaccinated. The environmental and management conditions were the same for both groups. The 1942 piglets vaccinated with Porcilis Ileitis were distributed in 25 groups or experimental units and the 2143 non-vaccinated piglets were distributed in 30 groups or experimental units. All pigs had ad libitum access to feed and water throughout the trial. Diets were formulated to be identical in all treatments, the % Crude Protein (PC) of the diets was 15.50%, 15.02% and 16.50% for the grower, fattening and finishing feeds, respectively. The fattening feed was medicated with 200 ppm tiamulin, 600 ppm chlortetracycline, 82.5 ppm methylene disalicylate bacitracin and 80 ppm halquinol.

1415 carcasses of the Porcilis Ileitis treatment were evaluated, corresponding to 74% of the pigs in the trial, and control treatment information was obtained from 1373 carcasses corresponding to 65% of the pigs in the trial. Hot carcass weight and backfat were analyzed using multiple linear regression models (1). All the analysis was performed in R software (2).

Results

The group vaccinated with Porcilis Ileitis obtained better carcass quality compared to the non-vaccinated pigs (summary in table 1).

Table 1. Carcass Evaluation

Parameter	Vaccinated group (PI)	Control group
N° Carcasses	1415	1373
Final Age	147.4	150.61
Back fat	13.58	14.74
Lean meat	56.37	55.36
Hot carcasses weight (Kg)	95.18	95.86

For dorsal fat, it was observed that the carcasses of the treatment control showed a tendency to a higher proportion of animals with higher values of back fat. These results indicate a positive association between these two variables, when carcass weight increases there is a tendency to increase back fat. With 95% confidence, it is expected that for each kilogram of increase in hot carcass weight, the average dorsal fat increase between 0.14 and 0.18 mm. It is expected that the animals of the treatment Porcilis Ileitis present on average -1.05 mm of dorsal fat at the same weight in hot carcass ($P<0.0001$).

Conclusion and Discussion

In addition to the field results obtained in the present study, the quality of the carcasses was evaluated, where better results in backfat and carcass yield could be seen in the pigs treated with Porcilis Ileitis vs. the control or non-vaccinated group. The hypothesis is raised that this result may be related to an optimization of the nutrients and microelements of the diet, to have a better intestinal integrity, generating a greater benefit to meat processors.

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Use of a supplemental source of injectable energy for piglets (21 days old) improved viability

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Introduction

The increase in the number of piglets born per farrowing reduced the uniformity of litters and, consequently, increased the frequency of low-birth-weight animals. These piglets have greater need of energy reserves due to the increased competition for colostrum, milk, heat sources and space. The association of these factors reduce animal welfare levels, chance of survival and performance rate of piglets (1,2). Thus, this evaluated the effects of supplementation with energy sources (MOV® -Vallée S/A Brazil*) via intramuscular on weight daily gain and mortality rate of piglets.

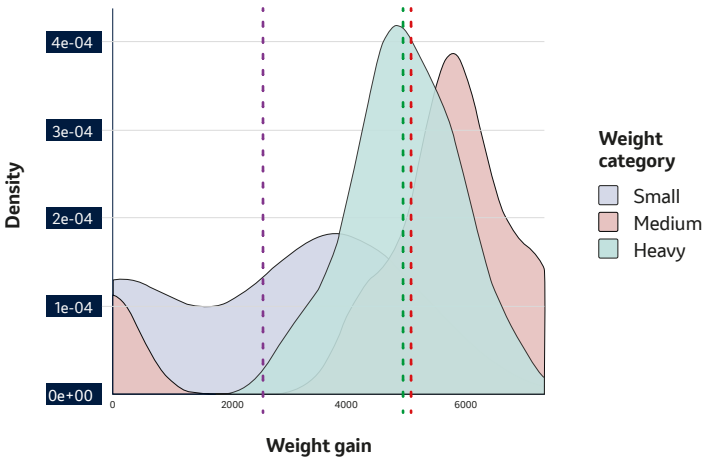
Materials and methods

The field trial was carried out in a Brazilian commercial farrow-to-finish operation. A total of fifty-four (54) piglets from the same farm (located in the Southern Brazil) and genetic were evaluated for the weight gain and mortality rate. Nine piglets from each litter (N=9) were distributed in three groups according to the born weight: light (up to 0.910 kg; 9 piglets), medium (1.100 to 1.335 kg; 9 piglets) and heavy (1.400 to 1.427 kg; 9 piglets) in the control (T1; N=27 piglets) and supplementation (T2 – use of 2 mL MOV® via IM; N=27 piglets) treatments. Each sow selected for the study had 14±2 milking piglets. Each 100 mL MOV® contains iron dextran (11,1111) ml; copper chloride dihydrate (0,00444 g), sodium glutamate monobasic monohydrate (1,03333 g), arginine hydrochloride (0,56667 g), lysine hydrochloride (1,11111 g), threonine (0,55556 g), valine (0,46667 g), nicotinamide (1,66667 g), choline chloride (2,22222 g). All piglets were distributed according to a randomized block design. Data was statistically analyzed through statistical model considering the effects of birth weight and treatment corrected for variables of interest through analysis of covariance using the R software. The litter was used as experimental unit.

Results

Piglets treated with MOV® were heavier at the weaning (on average 1,307 kg). There was a significant effect of birth weight group ($P<0.01$) on the weight gain using MOV®. The light, medium and heavy group of piglets were on average 411 g, 1,335 kg, 1,055 kg, respectively, heavier than the control group. The mortality was significant lower in the treatment group (0 vs 15%; $P < 0.05$), especially in the light (80%) and medium (20%) weight groups.

Table 1. Distribution of weight gain (mean) at 21 days of treated and untreated piglets in each weight group



Conclusion and Discussion

The use of MOV® improved weight gain and mortality rate of piglets up to 21 days old. In the gastrointestinal tract of neonates, amino acid oxidation occurs as the main energy fuel for enterocytes (3) can MOV® helped to the strongest effects on mortality rate were found in piglets up to 1.335 kg. Supplemental sources of energy can help piglets to cope is daily challenges, improve survival rate, litters uniformity, welfare and health. The MOV® supplementation at this stage proved to be an important tool to improve the performance of piglets in the farrowing. Further studies evaluating MOV®-supplemented piglets from birth to slaughter are necessary to identify its effects on intestinal integrity, health and carcass quality.

Acknowledgments

Not applicable in these sections.

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Vallée S/A Brazil- Marca Registrada da MSD Saúde Animal, Brasil.

MSD Animal Health

Using APXIV to adjust vaccination programs in two Chinese swine farms

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Introduction

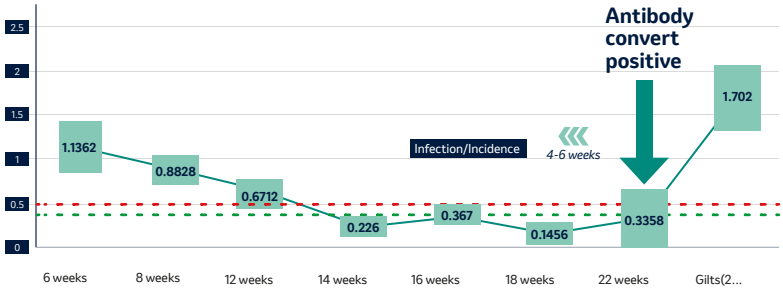
Porcine pleuropneumonia caused by *Actinobacillus pleuropneumoniae* (APP) is capable of affecting swine of all ages. It commonly causes clinical problems from 12-24 weeks of age and the economic impacts are higher if older pigs are affected1. The APP organism can secrete 4 kinds of toxins, APX I, APX II, APX III and APX IV2. APX IV can only be secreted in vivo. APX IV antibody testing can be used to guide ideal vaccination timing. Serological testing was conducted in two farms in Yunnan, China with mortality attributed to APP in growing pigs at 15% of a batch or higher from 12-24 weeks of age. The initial vaccination timing was at 8 and 12 weeks of age.

Materials and methods

Serum was collected from swine at 6, 8, 12, 14, 16, 18 and 22 weeks of age and gilts (about 210 days old) (n=5 in each age group). Samples were tested with APX IV (IDEXX) Elisa test.

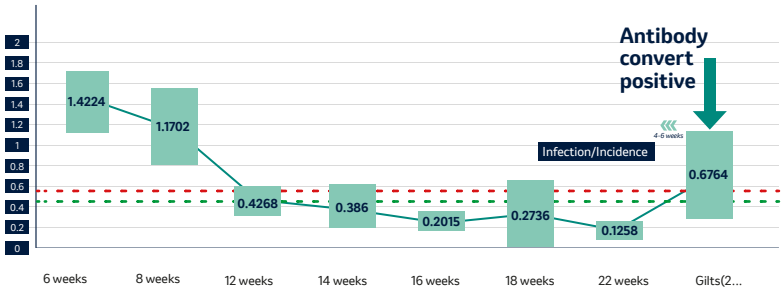
Results

Farm A



The result judgment standard: The sample test result S/P < 0.4, it is judged as negative; The S/P of the sample is ≥ 0.5, it is judged as positive. The sample test result is 0.4 ≤ S/P<0.5, it is judged as suspicious.

Farm B



The result judgment standard: The sample test result S/P < 0.4, it is judged as negative; The S/P of the sample is ≥ 0.5, it is judged as positive. The sample test result is 0.4 ≤ S/P<0.5, it is judged as suspicious.

Conclusion

The maternal derived antibody (MDA) level of APP in the two pig farms was high, suggesting that sow herds continued to serve as a reservoir of APP. MDA levels were also high at the time of vaccination. High levels of MDA at vaccination were demonstrated to interfere with efficacy in studies of other pathogens3. The vaccination program of both farms was adjusted to first dose at 10 weeks and second dose at 14 weeks, subsequently mortality in both grow finish herds improved to <5% from 12-24 weeks of age. A possible strategy to optimize APP vaccination is to use APX IV serology to understand the epidemiology and MDA status of a farm.

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Return on investment (ROI) in pigs vaccinated with Porcilis® Ileitis in a commercial farm.

AUTHORS:

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Introduction

Ileitis or Proliferative Enteropathy is caused by an obligate intracellular bacterium, *Lawsonia intracellularis*, and manifests clinically in several ways; The chronic form is known as Porcine Intestinal Adenomatosis (PIA), the acute form is known as Proliferative Hemorrhagic Enteropathy (PHE) and the Sub-clinical form is mainly characterized by poor performance (1); Sub-clinical disease is the most common form of presentation in Colombia with a high economic impact due the low performance of the animals in some productive parameters. In a 2006 study where 19 veterinarians from large companies in the United States were interviewed to classify and quantify productivity and economic losses due to major health problems, in 14 of these companies, ileitis was classified as the main health challenge (2); In this same study, it is estimated that productivity losses and increased production costs associated with Ileitis per marketed pig are estimated at USD 4.65 (unpublished data). The objective of this study was to evaluate the impact of vaccination with Porcilis Ileitis on the technical and economic results in the fattening stage in a commercial farm using the Porcilis Ileitis vaccine (containing inactivated L. *intracellularis* bacteria in XSOLVE adjuvant), without restricting the use of antibiotics.

Materials and methods

The trial was conducted on a farm with 2.100 sows located in the region of Antioquia (Colombia) with a history of Ileitis, diagnosed by Elisa (Svanovir® L. *intracellularis*/Ileitis-Ab) and clinical signs associated with intestinal hemorrhagic syndrome at the end of the fattening. For this study, 4085 piglets were selected at the beginning of the fattening phase with an average age of 75.3 days of life, which were distributed in two treatments, 1942 piglets vaccinated with Porcilis Ileitis (Treatment 1) with 25 replicates and 2143 unvaccinated piglets (Treatment 2) with 30 replicates. The Porcilis Ileitis group was vaccinated at 21 days of age (weaning), while the control group was not vaccinated. The environmental and management conditions were the same for both groups. The 1942 piglets vaccinated with Porcilis Ileitis were distributed in 25 groups or experimental units and the 2143 non-vaccinated piglets were distributed in 30 groups or experimental units. The total of each treatment was weighed at the beginning of the evaluation (75.3 days of life +/- 0.81 days), then it was weighed randomly, selecting 20% at 103 and 133 days of life, age at which the harvest was made or sale of pigs to the market begins. All pigs had ad libitum access to feed and water throughout the trial. The economic results of this study were evaluated through statistical simulation and predictions of the analysis models adjusted according to the case. All the analysis was performed in R software (3). For the economic evaluation of this study, the following values were considered; Kg fattening feed USD 0,482, Kg live weight pigs to market USD 1,899 (average sales 2021 according to source www.porkcolombia.co) and treatment cost (Porcilis Ileitis) USD 1,04. The Colombian peso to US dollar exchange rate used for this study was $3,982.60/1 USD as of January 31, 2022, according to Banco of the Republica.

Results

The group vaccinated with Porcilis Ileitis obtained better results in the productive parameters compared to the non-vaccinated pigs (summary in table 1).

Table 1. Evaluated parameters

Parameter	Vaccinated group (PI)	Control group
Final Age	132.4	133.6
Final weight (kg)	100.57	98.8
ADG (grs)	1109[a]	1078
FCR	1.96	2.06
FC (Kg)	124.72[a]	128.10
M (%)	0.41	0.65

a: statistically significant difference

The P. Ileitis treatment groups presented on average a lower cost per pig in the feed (feed consumption - FC) value of USD 1,629. Assuming a stable sale price for all the animals, the pigs of the Porcilis Ileitis treatment presented a higher sales value in USD 3.36 per pig. Under these conditions, the Porcilis Ileitis treatment generated a return on investment (ROI) of 3.2:1 Considering the moment in which this study ends (beginning of the harvest), the result may be better considering that Ileitis is a disease that generates a greater impact in the last weeks of life of pigs.

Conclusion and Discussion

In this study, it was observed that the implementation of a program with Porcilis Ileitis in piglets generates a positive ROI (Return on Investment), a value that can have a greater impact if we consider a strategic management of medications in addition to obtaining a better gut integrity.

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MSD Animal Health

Case report: Improvement of animal health and performance parameters in a German fattening farm after introduction of an intramuscular *Lawsonia intracellularis* vaccination at the beginning of fattening

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Introduction

The pathogen *Lawsonia intracellularis* (LI) is widely distributed in pig herds (1). The clinical picture of a Lawsonia infection is strongly dependent on the immune status of the animals, the pathogen dose, and the age of the animals. Acute diseased pigs show massive bloody diarrhea with aversion to feed, pallor and apathy. This disease leads to a mortality up to 50% (2) and strongly reduced performance in the fattening period.

Materials and methods

This report refers to a fattening farm with 1988 fattening places in western Germany (all-in all-out management for 3 animal groups on his farm). After the change of the piglet origin in 2015, clinical problems with acute Lawsonia infections in the fattening phase occurred repeatedly. Most of the time clinics started with 50-60kg. The animals showed bloody diarrhea became pale and some were growth retarded. Selected animals for necropsy macroscopically showed porcine hemorrhagic enteropathy (PHE) (Fig.1) and PCR examination of the ileum confirmed the Lawsonia infection.

Figure 1: View of opened ileum with marked PHE, the colon is also affected.

Losses due to LI were estimated between 0.2-0.5%. In almost every group, oral group treatments with Tylosin, as well as individual animal treatments with Tylosin were sometimes carried out repeatedly. In total, the farm came up with 10.81 treatment days/animal. Due to the farmer's targeted treatments, the pigs grew very homogeneously, and a high health status could be maintained. Furthermore, the farmer reported that the time required for animal observations and treatments was immense. In 2020, the farmer started to vaccinate his pigs intramuscularly with Porcilis® Lawsonia at the beginning of fattening with 27 kg. To test the success of the vaccination, he divided the pigs into vaccinated groups (2 groups, 1533 pigs) and unvaccinated comparison groups (3 groups, 1983 pigs).
The fattening performance of each group was used for comparison.

Results

Already while fattening, the animals appeared more vital and fit. The LI clinic could be controlled and the fattening performance improved. Losses decreased from 0.97% to 0.4%. Feed conversion improved from 1: 2.58 to 1: 2.51. Daily weight gain increased by 40.3 g and veterinary costs were reduced to 0.25€ (excl. vaccine costs) (Fig. 2). Furthermore, the fattening period was reduced by 2.67 days. Here, the low purchased weight with - 0.85kg and the higher sales weight with + 0.9kg of the vaccination group must be mentioned (Tab. 1). As a result of the improved biological performance an economic benefit of 4.42€/fattening pig could be achieved. (Vaccination costs not considered).

	Non Vacinated	Vaccinated
Number of animals	1983	1533
Weight, start of fattering (kg)	26.70	25.85
Weight, start of fattering (kg)	121.93	123.20

Table 1: Number of animals evaluated and weight development

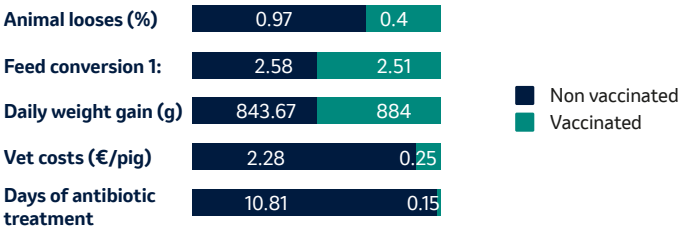

Figure 2: Performance parameters with and without Porcilis® Lawsonia

Conclusion

The results summarized here show that vaccination with Porcilis® Lawsonia at the beginning of the fattening period can significantly reduce acute Lawsonia infection in the mid- and end of fattening, produce an improvement in their biological performance as well as the economic outcome and significantly minimize the therapeutic use of antibiotics.

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MSD Animal Health

Biosecurity measures and disinfection practices in large Hungarian swine farms

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Background & Objectives

Evolution of large-scale swine herds made effective biosecurity measurements essential. The aim of our research was to survey the external and internal biosecurity, and the use of disinfectants and hygienic tools on large Hungarian swine farms.

Materials and methods

We surveyed 19 swine farms (altogether 30,719 sows) by using a questionnaire between November 2020 and March 2021. Each questionnaire was completed during an interview in person or via videochat with the veterinarians and/or farm managers.

Results

Results showed that 26% of the farms were completely closed, the others quarantined the purchased animals for at least 60 days. The most common risk factor was the proximity between farms: only 28% of the surveyed herds were the only swine farm within a 3 km radius. Only 32-58% of the farms managed to load live animals and feed in the fence-line and 48-69% disinfected the transportation vehicles. As regards to showering and downtime the entrance of people to the herds was sufficient on almost every farm. AIAO systems were widely used but the service period before the following batch was usually short. Workers' movements inside the facility were usually performed in the direction of younger to older animals in most of the farms, but 58% of the farms had no tools dedicated to different rooms. Disinfection protocols were usually performed with a combination of aldehydes, peroxides, alcohols and detergents. UV-light was also a widely used method to disinfect personal belongings.

Discussion and Conclusion

Risk factors related to the location of the farm can be minimised by installing HEPA-filters to the barns. Limited vehicle entry could be achieved by installing the relevant infrastructure in the fence-line and if necessary, purchasing of a vehicle that is exclusively used inside the farm. Strict all in-all out management is possible by the implementation of the farm rotation plan and avoiding any capacity overrun of the houserooms.

MSD Animal Health

Combination of EnteriPig, serology and vaccination against Ileitis as a cost-effective method to increase the farms performance

- A field study -

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Introduction

Before implementation of changes in the herd health protocol is very important to analyze its predicted effect, and after the introduction is crucial to explore the evaluation of the farm production parameters caused by the changes.

Materials and methods

A Hungarian large farm (2200 sows) with pathological and histopathological evidence of Ileitis uses antibiotics to reduce the losses caused by the disease.
The farm management asks for some support to forecast the influence of intramuscular vaccination and to monitor its effect. We used the EnteriPig slaughterhouse ileum scoring tool to check the lesions caused by Ileitis and the EnteriPig Economic Calculator (based on Holtkamp's economical calculations, the actual prices and the production parameters of the farm) to compare the changes of economic parameters with or without vaccination.
We collected blood samples from the offspring (from 1 week of age by 3-4 weeks intervals, 14 samples/age group) and we measured the Lawsonia antibodies by ELISA for the best vaccination plan.
We collected the main production parameters of the fatteners, too. In the vaccinated group there were 11,700 animals and in the control group 9,803 pigs, respectively.

Results

EnteriPig palpation calculation (no vaccination vs. vaccination): no visible lesions (16% vs. 47%), mild lesions (44% vs. 46%), sever lesions (40% vs. 7%) EnteriPig score: from 1,24 to 0,6.
Production parameters: Mortality (%) from 4,25 to 2,27 (-46%), ADG (g/d) from 856 to 900 (+13,5%), FCR (kg/kg) from 2,5 to 2,325 (-7,12%). Regarding the antibiotic consumption against intestinal diseases a 90% reduction was observed. The return on investment (ROI) of the vaccination) was 11 and the extra profit was 8,3 euro/fattener.

Discussion and Conclusion

The EnteriPig is a quick, validated and cost-effective tool to make the damage of Ileitis visible and to forecast the production and economic impact of the vaccination. Serological examination supports our vaccination positioning by an effective vaccine to increase the performance and profitability of herds.

MSD Animal Health

Swine influenza prevalence and subtype variance on swine farms in Central Europe

- A field study -

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Introduction

Swine influenza virus is an important player in the PRDC of the swine farm industry.
The aim of this study was to get more information about how many farms in Hungary are infected with influenza, and how the presence of 4 different subtypes differ between the sampled farms.

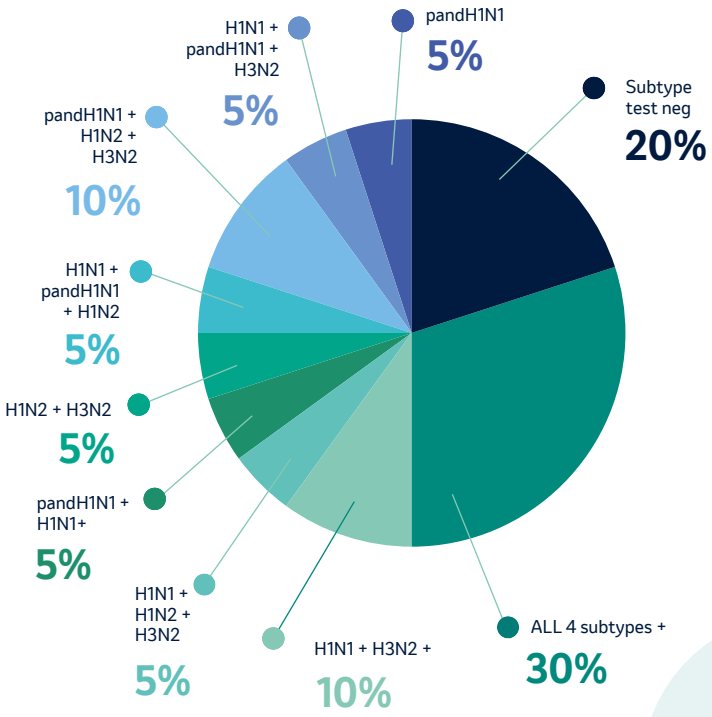
Materials and methods

We made the surveys on 25 Hungarian farms in 2019-2021. We used the same protocol for blood sampling: 4-8-12-16-20-24 weeks old pigs, and fatteners were sampled, and 14 blood samples were taken from every age group. We used the IDEXX ELISA for Influenza-A antibody search, and HI tests for the subtypes (H1N1, pandemic H1N1, H1N2, H3N2).

Results

We found that 84% of the farms were positive with IDEXX ELISA for Influenza-A. 60% of the farms were positive for H1N1, 65% for pandemic H1N1, 65% for H1N2, and 65% for H3N2.
Variance between the subtypes:

INFLUENZA SUBTYPE VARIANCY



Conclusion and Discussion

If we want to vaccinate against influenza on our farm, we have to know which subtypes are present on the farm. Commercial vaccines sometimes can't protect against all the subtypes what are inside the farm, so maybe in the future there will be a need for farm specific virus-vaccines. It is very important to continuously monitor the pressure of the virus, the level of the protection, and the circulation.

Acknowledgements

MSD AH CER SBU HU
Hanny Swam

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Alexander Mastin, Pablo Alarcon, Dirk Pfeiffer, James Wood, Susanna Williamson, Ian Brown, Barbara Wieland
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Kurt D. Rossow, Paul Yeske, Sagar M. Goyal, Richard Webby, James E. Collins Thomas J. Inzana1, and Brad Fenwick2*
3.Disease of swine 11th edition

MSD Animal Health

COMPARATIVE EFFICACY STUDY OF PORCILIS® PCV M HYO IN A JAPANESE COMMERCIAL FARM

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Introduction

Porcine Circovirus Type 2 (PCV2) and *Mycoplasma hyopneumoniae* (*M.hyopneumoniae*) are common pathogens affecting swine production worldwide. qPCR can be used to monitor for PCV2 viremia and hence vaccination efficacy. PCV2 viremia is directly correlated to decreased Average Daily Gain (ADG)1. PCV2 infections later in life have greater economic consequences for swine as this coincides with high growth phases. The aim of this study was to observe and compare the efficacy of Porcilis® PCV M Hyo against a competitor combination ready to use (RTU) vaccine in Japan.

Materials and methods

This study was performed in a commercial farm in a swine dense region of southern Japan. The farm used a RTU PCV2b vaccine from May 2020 to Jan 2021. From Feb 2021, they began to use Porcilis® PCV M Hyo. A retrospective analysis was conducted to understand the efficacy of PCV2 control. Cross-sectional blood sampling of the herd was conducted in Feb 2021, just before the switch, to understand the background PCV2 viremia level. Subsequently vaccination with Porcilis® PCV M Hyo was conducted and monthly sampling was conducted from Feb – Aug 2021. Samples were pooled 5-1 and tested for qPCR.

Group	Age Groups (N)	Date of Sampling	Treatment	Parameters Assessed
A	30/60/90/120/ 150/180 *(5 per group)*	2nd Feb 2021	competitor RTU PCV2b vaccine	PCV2 viremia & serology
B	30/60/90/120/ 150/180 *(5 per group)*	Monthly from Feb to Aug 2021	Porcilis® PCV M Hyo	PCV2 viremia & serology

Results

Viremia was detected at day 150 (pooled average = 3.6 x 105 copies/uL) and day 180 (pooled average = 2.4 x 104 copies/uL) in Group A. In contrast, viremia was not detected at either of these days of production in Group B.

Conclusion

The viremia measurement results suggest that Porcilis® PCV M Hyo provided excellent control of PCV2 viremia, with viremia not found in vaccinated pigs after use.

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MSD Animal Health

COMPARATIVE SAFETY STUDY OF PORCILIS® PCV M HYO IN A JAPANESE COMMERCIAL FARM

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Introduction

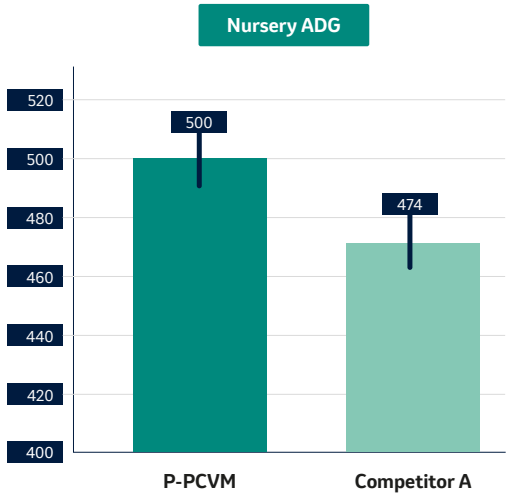
Apart from immediate effects such as swelling or tenderness at the site of vaccination, other commonly observed effects of vaccine reactogenicity in swine are a period of feed aversion, possibly leading to decreased Average Daily Gain (ADG). Use of a safe vaccine would thus not affect nursery ADG relative to a control group. The aim was to compare and observe the field safety of Porcilis® PCV M Hyo (P-PCVM) against a mixed PCV2 and *Mycoplasma hyopneumoniae* (M.hyo) vaccine in field conditions in Japan.

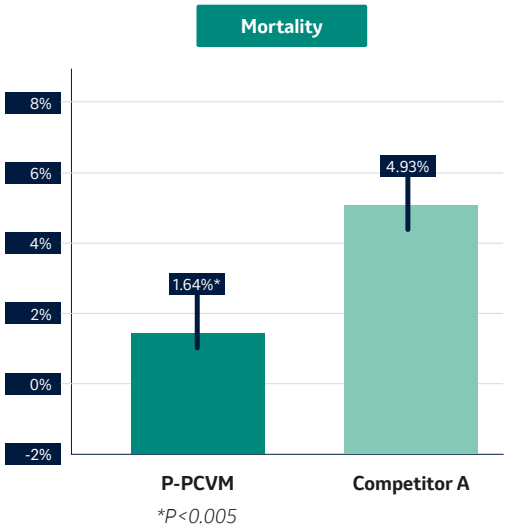
Materials and methods

This study was performed in a 1150 sow level commercial farm in a swine dense region of Southern Japan. Pigs were randomly allocated within litter to one of 2 treatments – 1) 610 piglets vaccinated at 3 weeks of age with Porcilis® PCV M Hyo 2) 609 piglets vaccinated at 3 weeks of age with a competitor product. Safety parameters observed were average daily weight gain and mortality from weaning to nursery exit. Starting weights between groups showed no statistical differences (Group 1: 6.23kg, Group 2: 6.36kg, p>0.05). Results were analyzed using Microsoft Excel Data Analysis Toolkit. ADG was analyzed by T Test and mortality was analyzed by Chi-Square test.

Results

No local or systemic reactions were observed in the 14-day post-vaccination period, across both vaccines used in the study. Group 1 (P-PCVM) showed statistically improved mortality (p=.002453) and numerically better ADG (p= 0.1468).





*P<0.005

Conclusion

The post vaccination observations support the fact that P-PCVM had a similar safety profile in swine compared to a competitor vaccine on the market in Japan. Improved ADG is presumed that fewer adverse event prevents from growth retardation during nursery.

MSD Animal Health

Control of PRRS using Porcilis® PRRS in 3 Korea commercial farms

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Introduction

Mixed PRRSV infection with both NA and EU strains of PRRSV is common in Asia. In such a situation, producers face difficulty selecting between NA or EU vaccines. The use of multiple PRRSV live PRRSV vaccines on farm may increase changes of reversion to virulence or recombination mutants arising1. PRRSV viremia is correlated with decreased zootechnical performance and increased incidence of respiratory lesions2. Monitoring the PRRSV viremia status of the farm after vaccination with PRRSV vaccines is therefore a good way to evaluate the efficacy. We performed this study to assess if Porcilis PRRS can be used to stabilize farms with PRRS NA/EU mix-infection by sow vaccination.

Materials and methods

The study was carried out in South Korea and involved 3 commercial farrow to finish pig farms with active virus transmission from sows to piglets and viremia in the nursery. Only the farms implementing an immunization program using Porcilis PRRS were included in the present study. Vaccine used in this study was Porcilis PRRS vaccine (manufacturer: MSD Animal Health, Boxmeer). Blood samples were obtained from 20, 40, 70, 100 & 130 day-age old pigs, as well as breeding animals (sows & gilts). Serological (ELISA) and virological (PCR) tests were performed on blood samples from different age groups to determine the status of infection. PRRSV ELISA tests from pig sera were carried out applying the IDEXX PRRSV ELISA Kit (IDEXX, USA) according to the recommendations of the manufacturer. RNA from serum samples was extracted and PCR was performed by real-time PCR machine. Samples positive by PCR were subjected to sequencing. The viral ORF5 was sequenced preferably. Sequencing was performed with the Sanger method on ABI 3500 sequencer (Applied Biosystems). Chromatograms were analyzed and edited manually using the BioEdit software version 7.2. In this study, PRRSV ORF5 sequences (606 nt) were analyzed. Sequence analysis was performed using the “similarity network” diagram to identify the closest, most similar sequences to reference strains. Subsequently, the percentile similarity of these sequences to ORF5 was evaluated relative to that of the PRRSV reference strain in GenBank.

Results and Conclusion

In Farm 1 and Farm 2, the herd remained unstable but the overall antigen detection rate decreased after Porcilis PRRS vaccination. It was confirmed that stabilization was achieved in Farm 3 as antigens were not detected at 20 and 40 days age-old after vaccination. As a result of the productivity in the test farms, there was little significance between the PRRSV fluctuation and the herd productivity. These means that actual productivity could be affected by complex factors, such as breeding management, seasonal factors, and other diseases including PRRSV infection. If combined with herd management strategy improvements such as biosecurity, we found that Porcilis PRRS can be applied to farms with mixed PRRSV infection and can be effective in stabilizing mixed PRRS infected farms.

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MSD Animal Health

Comparing the Efficacy of Porcine Circovirus 2 Vaccines in Reducing Viremia Titer

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Introduction

Porcine circovirus 2 (PCV2) infection is commonly associated with a group of complex multi-factorial diseases classified under the umbrella term of Porcine circovirus associated diseases (PCVAD) (1). It has been shown that PCV2 viremia load correlates with disease severity and as a result, negatively impact zootechnical parameters such as average daily gain (ADG) in a load dependent manner (2,3,4,5). An efficacious PCV2 vaccine should be able to reduce viremia titer over the production lifetime of pigs.

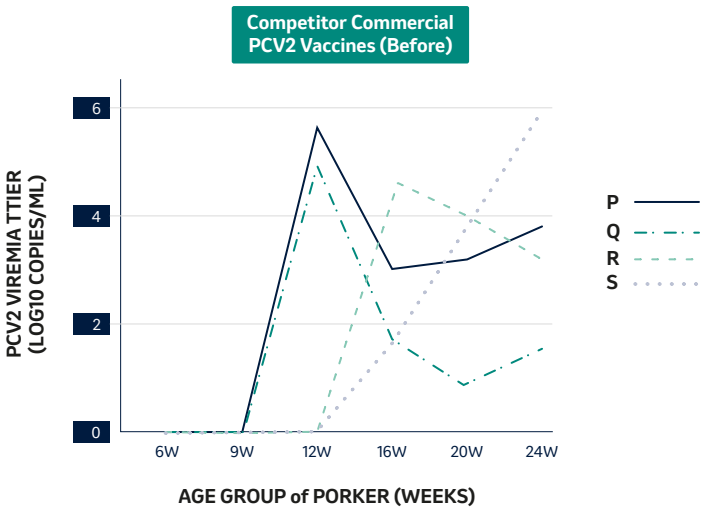
Materials and methods

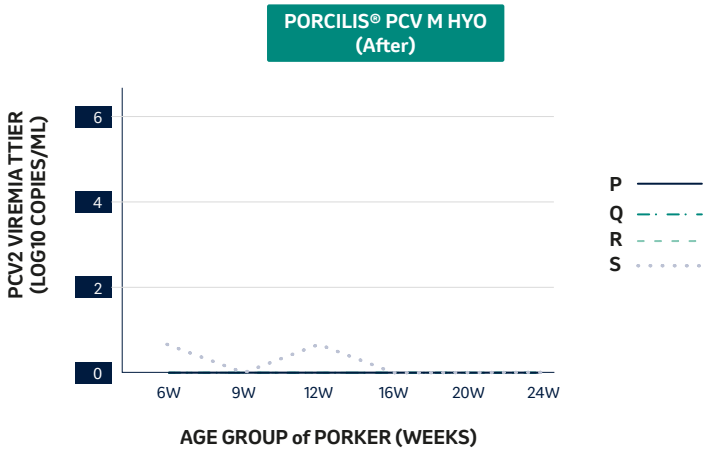
Field trial was conducted in four selected commercial pig farms: Farm P, Q, R, and S. All four farms were practicing farrow-to-finish operation with 200 – 2,000 sows and husbandry practices typical of pig production in Malaysia. PCV2 vaccination was routinely done using existing competitor commercial PCV2 vaccines. PORCILIS® PCV M HYO vaccination regime was introduced to the farms via intramuscular injection in the neck region of 3 weeks old piglets. Serum samples were collected from the porker herds before and after 12 months of practicing PORCILIS® PCV M HYO vaccination regime in the farms. Ten serum samples were collected from each age group: six, nine, 12, 16, 20 to 24 weeks of age. Serum viremia titer was determined by qPCR (Intervet International B.V., Netherlands), whereas viremia titers over production lifetime was expressed as area under curve (AUC) values. To test for statistical association between PCV2 viremia titers before and after using PORCILIS® PCV M HYO, paired sample t test were performed with significance level set at $p < 0.05$.

Results

When farm routine PCV2 vaccination was done using existing competitor commercial PCV2 vaccines, viremia was detected across all four farms. Viremia was detected as early as nine weeks old, up until finisher stage of 24 weeks old with titers ranging from 0.6 – 6.0 log10 PCV2 virus copies / ml serum (Figure 1). After 12 months of practicing PORCILIS® PCV M HYO vaccination, Farm P, Q and R successfully achieved viremia free status across all tested age groups. Although viremia was still present in Farm S, the detected titer decreased markedly to 0.8 log10 PCV2 virus copies / ml (Figure 1). PCV2 viremia titers before and after using PORCILIS® PCV M HYO were statistically significant (t: 0.00066; $p < 0.05$).

Figure 1. Viremia titer detected in farms before and after 12 months of practicing PORCILIS® PCV M HYO vaccination regime.





When viremia titer over the production lifetime of pigs was expressed as AUC values, the PORCILIS® PCV M HYO group clearly demonstrated reduction of viremia severity (Table 1).

Table 1. Area under curve (AUC) to quantify PCV2 viremia titer over pig production lifetime.

FARM	AREA UNDER CURVE (AUC)			
PCV2 VACCINE	P	Q	R	S
COMPETITOR	49.5	27.7	41.6	30.3
PORCILIS® PCV M HYO	0	0	0	4.5

Conclusion and Discussion

PCV2 viral load in serum has been shown to be correlated with the severity of PCV2 disease manifestation (2,3,5). Further, PCV2 viremia has been shown to negatively impact the average daily gain (ADG) of porkers in a load dependent manner. The higher the serum PCV2 viremia titer, the lower the ADG of pigs (4). Hence, it is important to include herd PCV2 viremia titer as one of the aspects in evaluating field efficacy of PCV2 vaccine. In this field trial, PORCILIS® PCV M HYO proved to be an efficacious vaccine that is able to reduce PCV2 viremia titer over the production lifetime of pigs.

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MSD Animal Health

A safety study in pregnant sows vaccinated with Porcilis® PCV ID

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Introduction

Porcine circovirus type 2 (PCV2) is an economically important pathogen of pigs associated with a range of clinical manifestations, including post-weaning multi-systemic wasting syndrome and PCV2-associated reproductive failure[1]. Co-infection with PCV2 and other viruses is associated with worsened clinical outcomes[2]. Effective vaccination is key to the management of PCV2-associated disease. Prevention of early infection or reproductive-linked PCV2 may necessitate vaccination of pregnant sows. Porcilis® PCV ID is an effective single-injection intradermal vaccine that protects against PCV2. In this study, the safety of Porcilis® PCV ID in pregnant sows was examined.

Methods

50 pregnant sows at 7 months – 6 years of age, with no or a low PCV2 antibody titre (i.e. < 6.0 log2) and negative for PCV2 antigen by qPCR were treated with Porcilis® PCV ID. All groups received 3 consecutive doses at days 0, 14 and 28 of the study. Vaccine was administered using the IDAL® 3G Mono. The animals were followed to farrowing and zootechnical parameters were observed.
Group 1 (n=10): Placebo group, 0.2. ml Isotonic Saline Solution, Intradermal in the neck at 21 ±6 days of gestation.

Group 2 (n=10): 0.2. ml Porcilis PCV ID, Intradermal in the neck at 21 ±6 days of gestation.
Group 3 (n=10): 0.2. ml Porcilis PCV ID, Intradermal in the perianal region at 21 ±6 days of gestation.
Group 4 (n=10): 0.2. ml Porcilis PCV ID, Intradermal in the neck at 63 ±6 days of gestation.
Group 5 (n=10): 0.2. ml Porcilis PCV ID, Intradermal in the perianal region at 63 ±6 days of gestation.

Results and Discussion

No vaccine-related clinical abnormalities or mortality, or increase in rectal temperature was observed. No vaccine-related differences in frequencies per sow of live, healthy, weak, stillborn, mummified or crushed/mortality piglets, on in abortion or length of gestation were observed.
The results show that Porcilis® PCV ID is a safe vaccine that can be used at all stage of gestation in swine.

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Group	Mean litter size	Mean live per litter	% live (mean)	% Stillborns (mean)	% Mummies (mean)	Mean body weights live piglets	Length of gestation
1	19.2	16.3	84.9	10.7	4.4	1.35	116.8
2	17.8	15.9	87.5	10.6	1.9	1.21	118.6
3	17.8	16.2	92	6.7	1.5	1.31	118.2
4	19.8	16.3	78	14.2	2.8	1.37	116.5
5	17.9	15.8	92.3	9.9	1.1	1.31	117.9

MSD Animal Health

Field data of use of Porcilis® Lawsonia IM and ID vaccination on a Dutch closed sow herd

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Introduction

Ileitis is an old disease in pigs but the Lawsonia intracellularis bacterium is still causing significant economic damage, with often no obvious clinical symptoms on the farms. Several controlling interventions are available for the veterinarian and farmer, like antibiotics, feed additives and a live oral vaccine. Recently in Europe a new killed vaccine against Lawsonia intracellularis was introduced (1).
The case study describes the technical performance before and after the usage of Porcilis Lawsonia under Dutch field conditions on a closed Dutch pig farm.

Materials and methods

The 220 closed sow herd with 1600 finishing places in The Netherlands had a history for years of an oral Lawsonia vaccine administered via the water at the start of finishing phase to control the Ileitis in the finishers. By time, the farmer still needed tylosin for a week to diminish further clinical symptoms due to acute losses to Ileitis.

In November 2019, the farmer started at 12 weeks of age with Porcilis Lawsonia © (PL) (MSD Animal Health) by intramuscular injection and going back till the 3 weeks of age vaccination. The farmer switched to Porcilis Lawsonia ID with the IDAL device at 3 weeks, by dissolving the dry lyophilized powder of 50 dose Porcilis Lawsonia in the 50-dose bottle Porcilis PCV ID.

The monthly technical results like ADG, FCR, and mortality before – after were primary parameters used for evaluation, and antibiotic use, defined by DDD (3). The observed period was one year before the first Porcilis Lawsonia vaccinated pigs were slaughtered versus one year after start. Statistical analysis was done by 2-sample t-Tests, with Minitab. Due to seasonality influences, the same corresponding months were compared before after.

Results

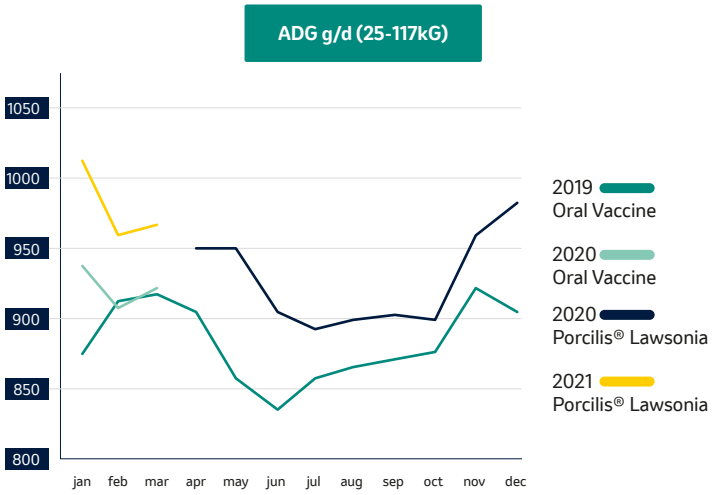
Since the start of Porcilis Lawsonia vaccinated pigs were slaughtered, on a whole year base before- after the ADG improved by +51 gr/day (p=0.002), FCR by – 0.08 (p=0.035) and mortality by 0.4% (p=0.16) (table and graph 1). Also, the antibiotic usage was lowered by 90 %: 12,9 DDD (2019) to 1,2 DDD (2020).

Table 1: technical results whole year Oral vaccine protocol vs whole year PL vaccinated pigs slaughtered

	Oral vaccine	Porcilis® Lawsonia	Difference
ADG[1]	890	941	+51*
FCR[1]	2.77	2.69	-0.08*
Mortality%[2]	2.2	1.8	-04

[1] april'19-mar'20 vs april'20-mar'21
[2]jan'19-jan'20 vs feb'20-feb'21
*P< 0.05

Graph 1: ADG figures per month from January 2019 till March 2021, for different vaccination protocols.



The first Porcilis Lawsonia IM vaccinated pigs were slaughtered mid-March 2020. Comparing the corresponding months of the oral drinking water period vs IM period (April '19 – Aug'19 vs April'20 -Aug'20) the ADG were 865 vs 920 gr/day (p<0,05); FCR 2,75 vs 2,68 (p>0,05) and mortality 2,3 vs 1,9 % (p>0,05). Comparing the corresponding months of the oral drinking water period vs ID period the ADG were 908 vs 956 gr/day (p<0,05); FCR 2,79 vs 2,70 (p>0,05) and mortality 2,1 vs 1.7 % (p>0,05).

Conclusion and Discussion

This case report shows the results of the successful implementation of the new killed IM and ID Lawsonia vaccine under field conditions a whole year around. The results are in line with other side by side results (3). The gross margin for this farm is estimated on + €3,70 vs the old vaccine protocol, based on the improved technical parameters (this is excluding antibiotics).

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MSD Animal Health

Prevention in the control of chronic leptospirosis infections, reducing antibiotic use and improving production parameters

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Introduction

Leptospirosis is one of the major swine reproductive diseases globally. In recent years, the frequency of clinical presentation has increased, in part due to group housing in gestation for sows' Bratislava is the most prevalent Leptospira serovar in Spain., generally causing chronic herd infections, with reproductive clinical symptoms mostly affecting farrowing rates and increasing litter scatter. Control requires a significant use of antibiotics. The aim of this study is to assess whether vaccination can reduce antibiotic use and improve reproductive parameters in large herds with chronic problems caused by this disease.

Materials and methods

The study was carried out under field conditions, in a farm with 3500 sows. The farm had a chronic reproductive failure problem (low farrowing rate, increased abortion rate and litter scatter). The problem was diagnosed using the microscope agglutination test (MAT, Neiker Tecnalia), in problem sow serum samples (20 sows, 80% with titers >= 1/100 Bratislava serovar). Different reproductive parameters were monitored: total born (TB), mummified (M), ultrasound fertility (F), farrowing rate (FR), litter scatter (LS), as well as antibiotic use, from January to October 2019.In July a multivalent vaccine against Leptospira was introduced (Porcilis Ery+Parvo+Lepto®). Weekly data were used for analysis (n=42)
2 periods were studied, (P)n=29 before vaccination and with antibiotics in feed (oxytetracycline), and after vaccination (V) n= 13

Results

During P, antibiotic was used twice a month due to reproductive problems. During V no antibiotics were used.
Ultrasound fertility (V) 93.37% vs 92.9% (P) p=0,837; FR 91.14% (V) vs 89,17% (P) p<0.05, average mummified fetuses per sow 0.146 (V) vs 0.58 (P) p<0.001; LS <9 piglets, 6.70% (V) vs 14.57%(P) p<0.05. In multiparous sows, TB 18.84(V) vs 18.94(P) p>0.05, in primiparous 15.99 (V) vs 15.69 (P) p=0.049, primiparous sows returning to estrus 3.45% (V) vs 7.95% (P) statistically significant (p<0.05)

Conclusion and Discussion

In this field study we have observed that preventive control in chronic leptospirosis situations, significantly reduces antibiotic use as well as improving reproduction parameters over what was achieved with antibiotic control. There were statistically significant differences in farrowing rates, mummified fetuses per litter, litter scatter and even fertility and total live born in primiparous sows with their first Leptospira infection.

Figure 1. Number of feed batches treated with Oxitetracycline during 2019

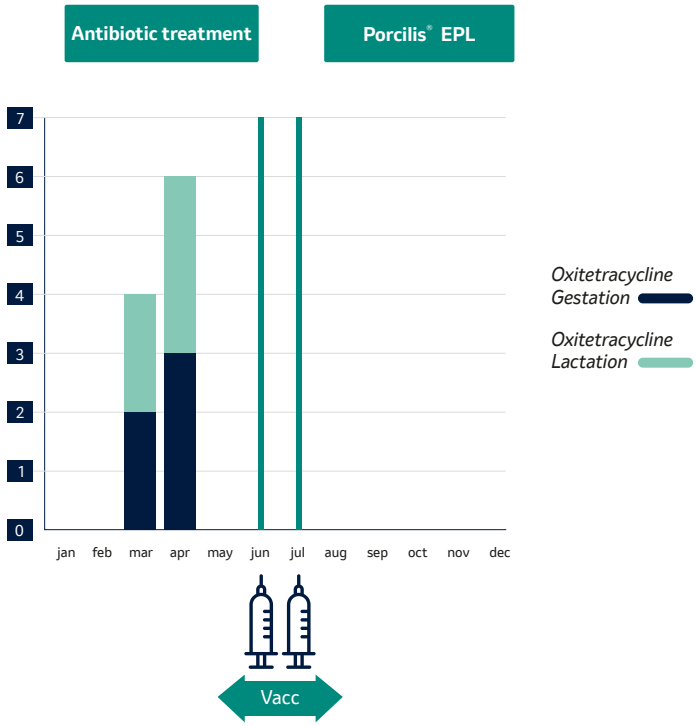

Table 1. Productivity results

	Control group	Vaccinated group
Total born multiparous	18.94	18.84
Total born primaparous	15.69[a]	15.99[b]
Return to estrus primaparous	7.95%[a]	3.45%[b]
Ultrasound fertility	92.9%	93.37%
% Farrowing	89.17[a]	91.14[b]
Weaned	13.97	15.01
Litter <9 piglets	14.57%[a]	6.70%[b]
Mummified/sow	0.580[a]	0.146[b]

[a,b] Different superscripts within the same row represent significant differences

MSD Animal Health

A high mortality of H1N1pdm vaccinated sows related with H1N2 subtype

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Introduction

Influenza A virus (IAV) causes an acute respiratory disease in swine which imposes substantial economic losses in pig production, especially when paired with additional respiratory pathogens (1). In Brazil, since the emergence of 2009 H1N1 pandemic virus (pdm09) several outbreaks associated with H1N1, H1N2 and H3N2 viruses have been described in pig herds (2). To minimize the impacts of IAV in pig farms, the use of vaccines has been applied preventively (3). However, the great antigenic and genetic diversity of IAVs has limited the vaccine efficacy or cross-protective immunity against heterologous homosubtypic or heterosubtypic IAVs (4). Also, a vaccine-associated enhanced respiratory disease (VAERD) in pigs that received a whole inactivated virus (WIV) vaccine and were challenged with a heterologous H1 virus has been reported (5,6). The aim of this study was to report an influenza outbreak with a high mortality rate in vaccinated sows.

Materials and methods

This case report refers to a breeding herd of 1,800 sows, located in Paraná state, routinely vaccinated with H1N1pdm inactivated virus, presented a mortality surge of 40 deaths in 8 days (28 gilts and 12 sows). A morbidity rate of 90% and a mortality rate of 2.2% were associated with clinical signs of fever, lethargy, nasal discharge, cough, and respiratory distress.
Necropsy was performed in 3 sows and tissue samples were collected for laboratory analysis. Analyzes were conducted for bacterial isolation on blood Agar plates and incubated at 37°C for 24-48 hours in microaerobic atmosphere, qPCR for *Actinobacillus pleuropneumoniae* using NewGene APPAmp kit (Simbios Biotecnologia), RT-q-PCR for IAV (7) and multiplex RT-PCR assays for IAV subtyping (8). For histopathologic examination, formalin-fixed lung tissue samples were routinely processed and stained with hematoxylin and eosin and immunohistochemistry for IAV using Universal LSAB™+/HRP Kit (Dako).

Results

Gross lesions were characterized by interlobular edema, dark red firm multilobular to coalescing lung lesions and congestion of the lung and trachea. Histological lesions consisted of moderate diffuse neutrophilic bronchopneumonia with necrotizing bronchiolitis, congestion and moderate edema. There was moderate diffuse lymphoplasmacytic tracheitis. No other significant lesions were observed in other tissues. On immunohistochemistry, all lungs were positive for IAV staining. Lung samples showed no bacterial growth, and they were negative for *A. pleuropneumoniae.* All lung samples were positive for IAV, and the virus subtype was characterized as H1N2 by multiplex RT-PCR.

Conclusion and Discussion

This study describes an influenza outbreak with a high mortality rate of sows previously vaccinated with an H1N1pdm virus and infected with an H1N2 virus. Influenza vaccines licensed in Brazil are a commercial monovalent H1N1pdm09 WIV and an autogenous WIV. Currently, IAV is endemic in Brazilian pig herds and genetically diverse virus subtypes circulate in the herds (9). A higher occurrence of H1N1pdm from 2012 to 2015, H3N2 in 2017, and H1hu in 2017 to 2019 has been shown (10), demonstrating a variability of IAV subtypes over time. Similar to this case, several studies described VAERD in pigs vaccinated with a WIV that is antigenically mismatched with the infecting virus (6). In these studies, severe inflammation and pneumonia were observed (5).
Although the HI test or phylogenetic analysis were not performed in our study, we can suggest the occurrence of VAERD based on the clinical signs, gross/histopathologic lesions, and mortality intensity. Regardless, the increasing genetic and antigenic diversity of H1 IAVs circulating in swine added to the use of WIV vaccines creates optimal conditions for vaccine-virus mismatch and potential VAERD in the swine population. In conclusion, it is recommended to determine the IAV that is circulating in a specific herd before the utilization of commercial inactivated IAV vaccines.

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MSD Animal Health

Saliva sampling as an alternative method besides pooled faeces samples for measuring qPCR Lawsonia levels

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Introduction

Lawsonia intracellularis bacterium is still causing significant economic damage in pigs with pooled faeces sample tested by qPCR as an ordinary measure of the disease level. Saliva sampling method is recently getting more attentions due to its advantage as being more user-friendly by veterinarians.
The aim of this study is to investigate whether a saliva sampling can be adapted as an alternative method in the field using statistical correlation analysis compared to the pooled faeces sampling.

Materials and methods

In a Dutch finishing farm samples were taken at different time points from 12 different compartments. At sampling point, in different pens a pooled faeces sample was collected from different fresh faeces present in that pen with a small spoon in a small container and stirred for making a homogenous sample. At the same time in that same pen, a saliva sample was collected by a chewing rope offered to the same pigs (1).
In total 195 times both individual samples of faeces and saliva were tested by qPCR Lawsonia in the BactoReal Lawsonia kit of Ingentix at the CDS in Boxmeer, The Netherlands. The samples were also pooled by 3 to represent the measurements per compartment side. Statistics calculations were conducted using Spearman's correlation and inter-rater reliability by Cohen's kappa (on Lawsonia status with 38.5 as the cut-off of Saliva sampling and 0 or not 0 as the cut-off of faeces

Results

A significantly strong correlation on individual samples (r=-0.804, p<0.001) was detected between both sampling methods using the Spearman's correlation.
The Kappa value was 0.49 with p<0.001 to show the concordance of both measurements (110/195 being positive by both sampling methods; table 1).
Also between the pooled samples a strong correlation (r=-0.818, p<0.001) was shown in the Spearman's correlation.

Table 1. Calculation of the Interrater reliability (individual samples)

		Faeces		Total
		POS	NEG	
SALIVA	POS	110	28	138
	NEG	16	41	57
TOTAL		126	69	195

Figure 1. Comparison of LI qPCR BactoReal Ingenetix Saliva rope samples (Ct) vs faeces (log copies/ µl) (individual samples)

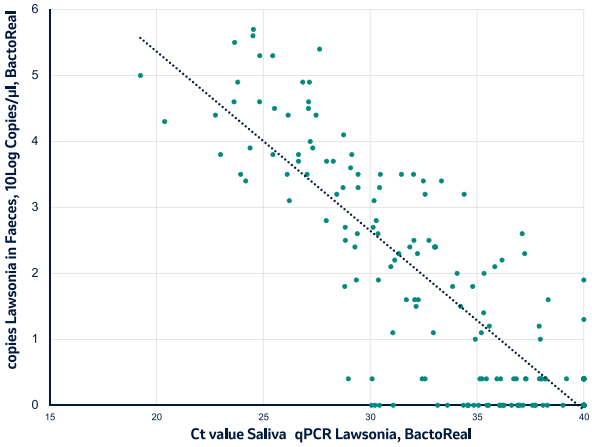
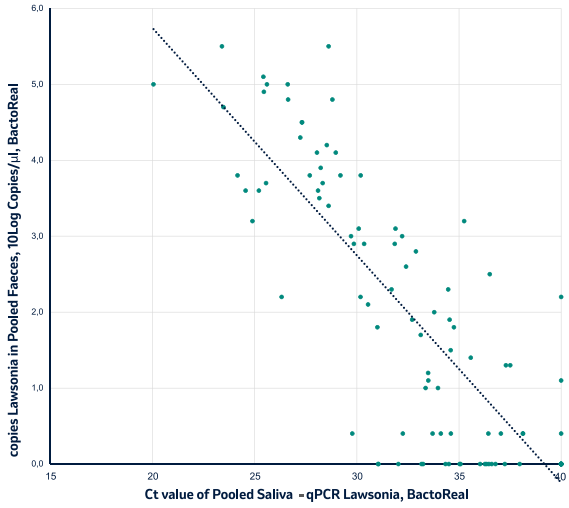


Figure 2. Comparison of LI qPCR BactoReal Ingenetix pooled Saliva rope samples (Ct) vs Pooled faeces (log copies/ µl)



Conclusion and Discussion

This study presents a strong correlation between both sampling methods for qPCR Lawsonia. It indicates that saliva sample is a reliable alternative sampling method for practical use in the field. Lawsonia is not excreted by the saliva; but it corresponds with the pen contamination. Saliva sampling outperforms faeces sampling mainly because that with a rope more pigs are sampled compared to some fresh faeces of that same pen from unknown sources. In addition, with rope sampling a veterinarian can collect a sample without entering the pen and when necessary, conduct additional PCR testing on the same sample on for instance PRRS, Flu or mycoplasma. Last but not least, compared to individual sampling, for practical reasons the use of pooled samples can be recommended as very similar strong correlation was shown using our data.

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MSD Animal Health

Vaccinating piglets with an intramuscular *Lawsonia intracellularis* vaccine effects animals' performance and economy during fattening period

AUTHORS:

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Introduction

Lawsonia intracellularis (LI) is an intracellular predominantly ileal located bacterium causing subclinical performance depression (1), Porcine Intestinal Adenomatosis (PIA; reduced growth performance, increased fattening time, less homogeneity of the fattening pigs) and Proliferative Hemorrhagic Enteritis (PHE; dark, tarry diarrhea which may result in death). This porcine intestinal pathogen with prevalence ranging from 48 to 100% in different swine producing countries has been identified as one of the main enteric pathogens during fattening of pigs worldwide (2).

Materials and methods

The observation was made in a closed herd farm (appr. 300 sows, 1500 nursery pigs, 3500 fatteners) in North East Germany. The farm in general showed a good health status. It was negative for PRRSV and clinical symptoms in the respiratory tract were absent. Piglets were vaccinated against edema disease, PCV and M. hyo in the suckling period. LI related symptoms started 4-5 weeks after beginning of the fattening period (severe bloody diarrhea). Individual tylosin injection was insufficient, so that feed medication with tiamulin was necessary in nearly all groups. Nevertheless, appr. 10 % of pigs developed poorly, 2-3 % were severe runts. Diagnostics showed LI seroconversion and high LI loads (PCR >log GE 6/g faeces) in the middle of fattening period. To control the LI symptoms vaccination with the Porcilis® Lawsonia + Porcilis® PCV M Hyo combination (LI vaccine dissolved in PCV M Hyo) was introduced. Performance data from the period without LI vaccination 01.07.-31.12.19 (vacc-) and with LI vaccination 01.04.-30.06.2020 (vacc +) were compared.

Results

With introduction of the LI vaccination the LI related clinical signs strongly decreased. Only sporadically individual treatment with tylosin, but no more group medication was necessary.

Table 1. Number of animals and weights in the differently vaccinated groups

	Vacc -	Vacc +
Number of animals (n)	4021	2034
Weight at stabling (kg)	27.4	27.3
Weight at slaughter (kg)	120.9	126.0

Homogeneity was distinctly enhanced with <1 % runts. Despite of the still present LI load (3.5-5.6 GE LI/g feces) the clinical situation clearly improved. Average daily weight gain (ADWG) increased by 21 g. Animal losses decreased by 0.9 %. Feed conversion ratio was improved by 0.16. Vet costs for gastrointestinal reasons diminished massively due to the reduced antibiotic treatments. Total antibiotic treatment days/pig were 91.8 % lowered in LI vaccinated pigs. In total a benefit of 3.96-4.17 €/pig could be calculated by implementation of Porcilis® Lawsonia vaccination (vaccination costs need to be considered separately).

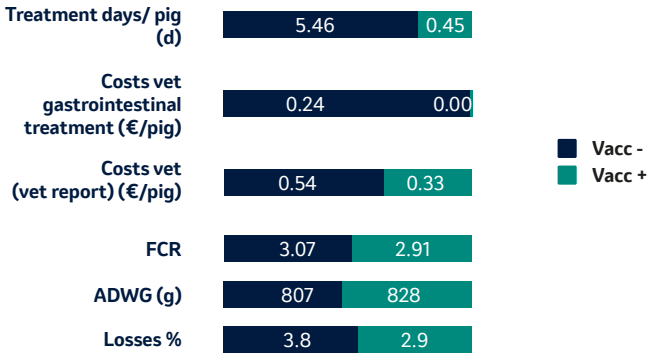

Figure 1: Performance data before (vacc-) and after vaccination with Porcilis® Lawsonia (vacc+)

Conclusions and Discussion

The infection of pigs with *Lawsonia intracellularis* can cause severe clinical disorders in a herd as seen in this case. Animals have to be treated with antibiotics and economic losses are unavoidable. Vaccination with Porcilis® Lawsonia helped to control clinical symptoms and enhance performance results noticeable. Farmers extra work, manly seen in antibiotic treatments and management of suffering and underperforming pigs was thereby reduced. In conclusion the vaccination ensured healthier pigs and lower production costs.

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(2) Arnold M et al. 2019. Porc Health Man 5:31
(3) Jacobs, AAC et al., 2019 Vaccine, 37:2149-2457

MSD Animal Health

Performance and economy of piglets during postweaning period at an organic farm before and after using an intramuscular *Lawsonia intracellularis* vaccine

AUTHORS:

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Introduction

Lawsonia intracellularis (LI) is one of the most important enteral pathogens in pigs (1). Farm prevalence of LI Infection in Germany is high and is often seen in the post-weaning period but even can happen in the farrowing house (2). Clinical signs usually appear in the fattening period but can also start post-weaning. Disease severity ranges from chronical illness with reduction in performance up to severe bloody diarrhoea and acute mortality (2). Due to regulatory standards organic farms are very limited in the use of antibiotics and therefore prophylaxis becomes the only way to prevent clinical outbreaks of the diseases.

Materials and methods

This field observation was made in an organic farrowing farm in North East Germany. Piglets were vaccinated intradermally against PCV and orally against Lawsonia via drench (oral vacc). However, LI related symptoms like diarrhoea, runts and acute losses were still seen in the nursery period. LI Vaccination was changed to Porcilis® Lawsonia at 24 days of age (i.m. vacc). Performance data from the differently vaccinated groups in the nursery were collected and compared on farm base.

Results

The occurrence of diarrhoea in the nursery was reduced with introducing the intramuscular LI vaccine. Furthermore, animal losses decreased, and group homogeneity was improved. Performance was increased by 34 g daily weight gain, a better feed conversion ratio (-0,03), and reduction of mortality from 7.4 to 3.4 %. In total, the enhanced performance resulted in a calculated economic benefit of 5.03 €/piglet (vaccination costs excluded).

Table 1. Number of animals and weights in the differently vaccinated groups

	Oral vacc	i.m. vacc
Number of animals (n)	10685	2793
Start weight (kg)	9.30	10.2
End weight (kg)	31.4	34.0
Daily weight gains (g)	355	389

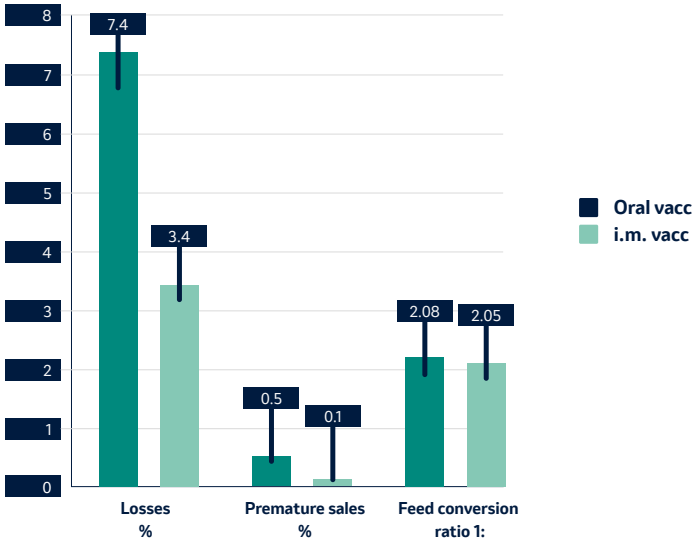

Figure 1: Animals' performance in oral vacc and i.m. vacc group

Conclusions and Discussion

Early onset of severe clinical disorders after weaning may occur in Lawsonia intracellularis infected pigs. The limited opportunities in using antibiotics can massively restrict the intervention options and can even become a problem of animal welfare. In this farm changing the vaccination protocol to an intramuscular LI vaccine ensured piglets health and helped to deal with the enteric disease resulting in improved performance and reduced production costs (5.03 €/piglet) in the nursery period.

References

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MSD Animal Health

Effect of vaccinating pigs with an intramuscular *Lawsonia intracellularis* vaccine on animals' performance and economy during fattening period

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Introduction

One of the most important bacteria causing enteric disorders in pigs is *Lawsonia intracellularis* (LI). Animals can be infected during different stages of live. Clinical signs vary from acute bloody diarrhoea to chronical or subclinical forms (2). Some risk factors as well as the animals age at infection seem to have an impact on the clinical outcome of the disease (1, 3). The presence of LI lowers animals' performance and causes economical losses mainly caused by poor performance: reduced weight gains, increased mortality, and higher feed conversion ratio (4).

Materials and methods

The field observation was made in a fattening farm in North East Germany. Piglets were intradermally vaccinated against PCV and orally against Lawsonia (oral vacc) pre weaning. LI related symptoms were seen at about 13-14 weeks of age: bloody diarrhoea, runts, and increased total losses. Vaccination was changed to the intramuscular vaccination with Porcilis® Lawsonia (i.m. vacc) at 3 weeks of age. Performance data from both groups were collected and compared on farm base. On this base an economic output of the vaccination change was calculated.

Results

With introducing the intramuscular inactivated LI vaccine, the clinical signs were reduced. These groups did not need antibiotic treatment via feed anymore. Homogeneity in the groups vaccinated with the intramuscular LI vaccine was enhanced noticeable. Daily weight gain (ADWG) increased by 43 g. Animal losses decreased by 2.3 % from 4.5 to 2.2 % and premature sales by 1.4%. Feed conversion ratio (FCR) was improved by 0.03. Vet costs diminished massively due to the reduced use of antibiotics. In total a benefit of 3.90 €/pig excluding vaccination costs could be calculated.

Table 1. Number of animals and weights in the differently vaccinated groups

	Oral vacc	i.m. vacc
Number of animals (n)	15161	4142
Weight at stabling (kg)	28.4	28.4
Weight at slaughter (kg)	119.4	122.3
Duration of fattening (d)	98	96

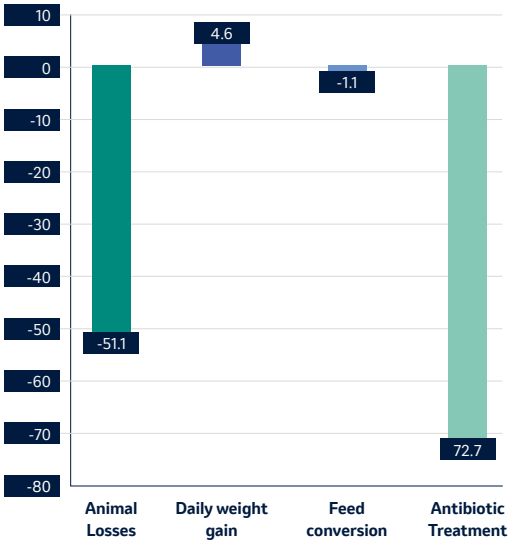

Figure 1: Relative change in animals' performance in oral vacc and i.m. vacc group

Conclusions and Discussion

The infection with *Lawsonia intracellularis* can cause severe clinical disorders and reduce economic results. Vaccination with Porcilis® Lawsonia helped to control clinical symptoms and led to enhanced performance sustainably. Premature sales, antibiotic treatments and management of underperforming pigs were decreased. In conclusion the intramuscular Lawsonia vaccination ensured healthier pigs, better performance, and an improved economic result through lower production costs.

References

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von und zur Mühlen F et al. 2021. Tierärztl. Umschau 2:28-37.

MSD Animal Health

Performance after vaccination with an intramuscular *Lawsonia intracellularis* vaccine at the beginning of fattening in a fattening farm subclinically infected with Lawsonia.

AUTHORS:

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Introduction

Lawsonia intracellularis (LI) is detected in feces in more than 90% of German swine herds with a history of diarrhea (1). The efficacy of an intramuscular Lawsonia intracellularis (LI) vaccination has been demonstrated (2). Due to purchase of 30 kg piglets for fattening, in practice, it is not always possible to vaccinate piglets against Lawsonia at young age. In these cases, vaccination at the beginning of fattening is an alternative.

Materials and methods

The field observation took place in a LI subclinical infected fattening farm in northern Germany with high performance and health level (incoming weight approx. 35,5 kg; live weight at slaughter approx. 133,8kg). Fattening pigs (only vaccinated against PCV2) showed sporadic diarrhea and 20% were smaller and orally treated with Tylosin. Right after placement more than 50% of the animals showed LI-antibodies and excreted relevant LI amounts (PCR>log GE 6/g feces). Regardless, half of the piglets (appr. 30kg) of 4 consecutive batches were vaccinated with Porcilis® Lawsonia (vacc+ n = 962) right after placement and compared to the parallel unvaccinated groups (vacc- n = 962). The performance parameters of both groups of animals were carefully documented and evaluated by the farmer.

Results

LI vaccinated groups showed less diarrhea and reduced LI excretion (weak positive to log GE 4/g feces). Fewer suddenly dead bloated pigs occurred. Only single animals were treated with antibiotics by injection. ADWG increased by 10.2g, FCR improved by 0.1 to 2.83, losses decreased (- 1.6%), same with veterinary costs (- .07€/fattening pig; excl. vaccination).

Table 1: Production costs in Porcilis® Lawsonia vacc+ and vacc- fattener pigs

	Vacc -	Vacc +	Delta
Feed expenses (€/pig)	63.53	61.74	-1.79
Animal losses (€/pig)	2.72	1.67	-1.05
Lost profit (€/pig)	-0.23	-0.15	0.07
Vet costs (€/pig)	0.11	0.04	-0.07
Duration of fattening	**66.13**	**63.9**	**-2.84**

As a result of the improved biological performance of Porcilis ® Lawsonia vaccinated animals, an economic advantage of 2,84 €/fattening pig (vaccination costs not included) even in the difficult German market situation in the 2nd half of 2020 could be reached.

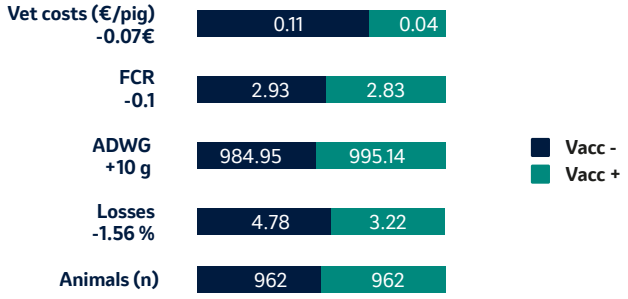
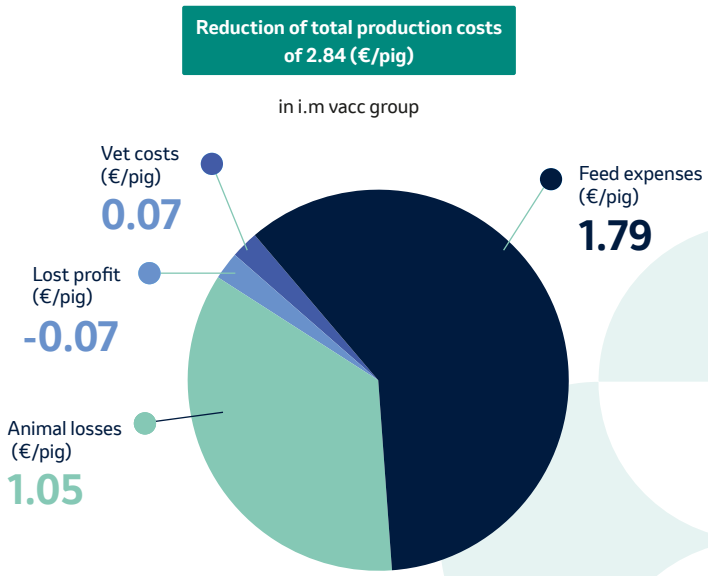


Figure 1: Performance data of fattening pigs with (vacc+) or without (vacc-) Porcilis® Lawsonia vaccination

A model calculation shows that this financial advantage increases to 3.30 €/fattening pig in a moderate market situation (vaccination costs not included).



Conclusions and Discussion

Despite pre-existing infection at the time of vaccination at placement of fattening piglets and only minor clinical problems in the fattening unit, Lawsonia vaccinated animals showed improved performance parameters compared to the non-vaccinated animals. This resulted in an economic advantage of 2.84 €/fattening pig (better market situation 3.30 €) in the vaccinated group.

References

(1) Arnold M et al. 2019. Porc Health Man 5:31
(2) Jacobs, AAC et al., 2019 Vaccine, 37:2149-2457

MSD Animal Health

Development of performance parameters and economic results after changing from oral vaccination against *Lawsonia intracellularis* to intramuscular vaccination in combination with a PCV M Hyo RTU vaccine

AUTHORS:

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Introduction

Lawsonia intracellularis (LI) can be detected in a large proportion of pig herds (1). Entry into herds usually occurs through the purchase of infected pigs (2). Lawsonia is ingested orally from the pigs' environment (3). While the infectious dose is relatively low, infected pigs can excrete high levels of the pathogen in their feces (3). After infection various clinical courses are described: Besides fulminant acute cases, chronic and subclinical disease with reduced growth performance play an important role (2). Registration trial data shows high efficacy of intramuscular Porcilis® Lawsonia vaccine (3). The present field case investigates the effect of changing Lawsonia vaccination from an oral vaccine to an intramuscular vaccination scheme.

Materials and methods

Incoming pigs to the observed fattening farm (1400 places) previously were vaccinated with a PCV Mhyo RTU vaccine and against PRRSV (24th day of life). Additionally, an oral Lawsonia vaccine was used at the beginning of fattening. Farmer and vet classified the herd as subclinical LI-infected whereby losses due to LI were described in the finishing group. Homogeneity of the animals appeared inconspicuous and only individual animals were treated. Then, Lawsonia vaccination scheme was changed to Porcilis® Lawsonia in combination with Porcilis® PCV Mhyo at 24th day of life. Performance data between both Lawsonia vaccination schemes was compared in two groups.

Results

Intramuscular vaccinated animals remained clinically healthy despite pathogen excretion in early and mid-fattening. Performance parameters showed improvements in IM vaccinated group compared to orally vaccinated group (FCR -0.2 to 2.8, ADWG +44 g to 826 g/day, losses -1.7% to 0.5% total, veterinary costs -0.05 Euro/fattening pig).

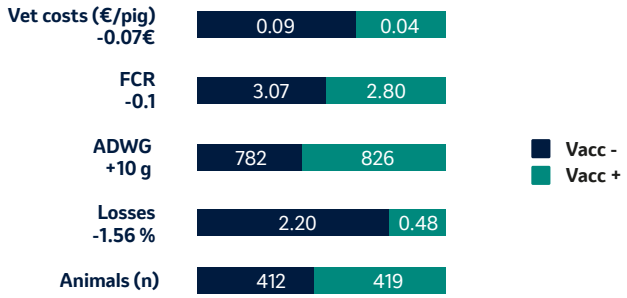

Figure 1:Group size and performance data in oral vaccinated and intramuscular vaccinated pigs.

Comparing both groups in total an economic advantage of 8.14 €/fattening pig was achieved (vaccination costs not included).

Table 1: Comparison of production costs in oral vaccinated and intramuscular vaccinated groups in €/pig produced

	Oral vaccine	P. Lawsonia i.m	Delta
Feed expenses (€/pig)	72.21	66.32	-6.39
Animal losses (€/pig)	2.21	0.47	-1.73
Lost profit (€/pig)	-0.05	-0.01	-0.04
Vet costs (€/pig)	0.09	0.04	0.06
Duration of fattening	**74.96**	**66.82**	**8.14**

Conclusions and Discussion

The use of the intramuscular Lawsonia vaccine in combination with a PCV Mhyo RTU vaccine resulted in a clear economic advantage. Overall, especially due to the improvement of FCR, additional 8.14 €/fattening pig in the intramuscular group compared to the orally vaccinated group were earned.

References

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(2)Vannucci et al., In: Zimmermann, J.J. et al (Eds). 2019 Diseases of Swine: 898-911
(3) Jacobs, AAC et al., 2019 Vaccine, 37:2149-2457

MSD Animal Health

A comparison between commercial *Mycoplasma hyopneumoniae* vaccines in swine in South Africa

AUTHORS:

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Introduction

Mycoplasma hyopneumoniae (M hyopneumoniae) is the etiologic agent of enzootic pneumonia(1). This agent causes a chronic, clinically mild infectious pneumonia of pigs characterized by a persistent dry cough with increased incidence of cranioventral pneumonia at slaughter. Postmortem lung lesion scoring systems are used to assess pneumonia associated with *M. hyopneumoniae infection*(3). Intradermal vaccination for *M. hyopneumoniae* using an intradermal device and a specially formulated intradermal vaccine were recently introduced in South Africa, where *M. hyopneumoniae* is endemic.

Materials and methods

Four weekly batches of pigs were included in the study. Each batch of pigs was divided into 3 groups and each group was vaccinated with one of 3 commercial vaccines per the usual vaccination schedule of the farm. One group per batch received the same vaccine that had been used on the farm prior to the trial via the intramuscular route (M+PAC); one group per batch received the intradermal vaccine using an intradermal device (Porcilis M Hyo ID Once) and one group per batch received a competitor vaccine via the intramuscular route. Lung lesion scoring was carried out in the abattoir and evaluated according to the Goodwin scoring system(4). Lung scores were compared using the Kruskal Wallis test.

Results

Results are presented in the order of groups (Porcilis M Hyo ID Once, Competitor Vaccine, M+PAC (Two injections). Statistical differences were observed in average lung scores at slaughter for week 1 (1.69 vs 2.45 vs 0.54, Kruskal Wallis P value = 0.031). No statistical differences were observed for week 2 (0.4 vs 0.37 vs 0.11), week 3 (0.05 vs 0 vs 0.02) or week 4 (1.73 vs 1.03 vs 1.47).

Conclusions

Selection of *M. hyopneumoniae* vaccines should be based on a combination of vaccine efficacy and labour. Two dose regimes have been documented to give greater protection but cause increased handling stress on the pigs(1). Farms should thus select the correct regime based on their *M. hyopneumoniae* situation and labour costs. In this farm, Porcilis M Hyo ID Once showed superior lung lesion reduction compared to a competitor vaccine (Respisure One). Equivalent performance was observed in Week 2, Week 3 and Week 4. Porcilis M Hyo ID Once may thus be a labour-saving tool delivering equivalent efficacy compared to some two dose competitor vaccines. In such a situation, there are also additional benefits compared to intramuscular vaccination, such as reduced stress on piglets(4) and the elimination of needles and the risk of needle breakage.

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MSD Animal Health

Effect of vaccination with Porcilis® Ileitis on the improvement of zootechnical indicators.

AUTHORS:

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Introduction

Ileitis or Proliferative Enteropathy is caused by an obligate intracellular bacterium, *Lawsonia intracellularis*, and manifests clinically in several ways. The objective of this study was to evaluate the impact of vaccination with Porcilis Ileitis (containing inactivated *L. intracellularis* bacteria in XSOLVE adjuvant) on the technical and economic results in the fattening stage in a commercial farm, without restricting the use of antibiotics.

Materials and methods

The trial was conducted on a farm with 2100 sows located in the region of Antioquia (Colombia) with a history of Ileitis, diagnosed by Elisa (Svanovir® L. intracellularis/Ileitis-Ab) and clinical signs associated with intestinal hemorrhagic syndrome at the end of the fattening. For this study, 4085 piglets were selected at the beginning of the fattening phase with an average age of 75.3 days of life, which were distributed in two treatments, 1942 piglets vaccinated with Porcilis Ileitis (Treatment 1) with 25 replicates and 2143 unvaccinated piglets (Treatment 2) with 30 replicates. The Porcilis Ileitis group was vaccinated IM at 21 days of age (weaning), while the control group was not vaccinated. The environmental and management conditions were the same for both groups. The 1942 piglets vaccinated with Porcilis Ileitis were distributed in 25 groups or experimental units and the 2143 non-vaccinated piglets were distributed in 30 groups or experimental units. The total of each treatment was weighed at the beginning of the evaluation (75.3 days of life +/- 0.81 days), then it was weighed randomly, selecting 20% at 103 and 133 days of life, age at which the harvest was made or sale of pigs to the market begins. All pigs had ad libitum access to feed and water throughout the trial. Diets were formulated to be identical in all treatments, the % Crude Protein (PC) of the diets was 15.50%, 15.02 and 16.50 for the grower, fattening and finishing feeds, respectively. The fattening feed was medicated with 200 ppm tiamulin, 600 ppm chlortetracycline, 82.5 ppm methylene disalicylate bacitracin and 80 ppm halquinol. Average daily gain (ADG), feed conversion ratio (FCR), feed consumption (FC) and mortality % (M) was evaluated at 133 days of life. Initial conditions (weight and age), individual weight on day 133, and feed conversion were analyzed by analysis of variance, the animal growth (GDP) was analyzed using a mixed linear regression model, feed consumption was analyzed using multiple linear regression model mortality was analyzed using the relative risk analysis methodology. The level of significance used was 90%, that is, the results whose test yielded a P value less than 0.1 are reported as significant. All the analysis was performed in R software (1).

Results

The group vaccinated with Porcilis Ileitis obtained better results in the productive parameters compared to the non-vaccinated pigs (summary in table 1).

Table 1. Evaluated parameters

Parameter	Vaccinated group	Control group
Final Age	132.4	133.6
Final weight (kg)	100.57	98.80
ADG (grs)	1109[a]	1078
FCR	1.96	2.06
FC (Kg)	124.72[a]	128.10
Mortality (%)	0.41	0.65

a: statistically significant difference.

The pigs vaccinated with Porcilis Ileitis treatment presented an average weight of 1.2 kg higher than the animals of the control treatment, this difference was statistically significant (P=0.0251). Likewise, the average daily gain (+31 grs) throughout fattening was significantly higher in the vaccinated animals (P = 0.0932). The difference in feed consumption per animal was 3.37 kg lower in pigs vaccinated with Porcilis Ileitis, this difference is equivalent to a daily consumption lower by 30.7 grams per animal, this difference was not statistically significant (P=0.1569); however, it is recommended to consider its practical importance given the low P value and the apparently large magnitude of the difference and its practical importance in the cost of feeding pigs. The feed conversion ratio throughout in the evaluated period was lower in the animals vaccinated with Porcilis Ileitis treatment. The % mortality was lower in the group vaccinated with Porcilis Ileitis Vs the unvaccinated group, (0.412% Vs 0.653%), additionally and considering mortality due to intestinal hemorrhagic syndrome, the difference was also better in the vaccinated group Vs the unvaccinated group (0.103% vs. 0.280%).

Conclusion and Discussion

In this study, it was observed that that the animals vaccinated with Porcilis Ileitis achieved a better performance in the productive parameters during the fattening period. These results may be associated with the improvement of the intestinal integrity of the piglets vaccinated with Porcilis Ileitis, which allows a better utilization of the nutrients included in the diet even with the administration of antibiotics in the feed.

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MSD Animal Health

Prevalence and distribution of porcine rotavirus group and type in suckling piglets in Canada between July 2019 and July 2021

AUTHORS:

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Introduction

Rotavirus (RV) is a diarrhea-causing viral pathogen well established in the swine industry (1). Older animals become resistant to disease caused by the RV as they develop post-exposure immunity to it, coupled to maturation of the gut physiology and overall immunity (1). RV-A, -B, and -C have been demonstrated to cause disease in swine and are identified by the viral protein 6 (VP6) antigenicity, while other structural proteins, VP4 and VP7, are employed in further typing the strains into P or G type based on antibody neutralization (1). Buchan and colleagues (2) summarized three years of diagnostic reports involving diarrhea presentation in Ontario (ON), Canada, during the lactation.

RV-A was detected in 69% of the cases of diarrhea in suckling piglets, RV-C in 37% of the cases, and RV-B in 13% of the cases. Observing the need of better data across Canada to aid in informed decisions, the objective of this study was to determine the prevalence of RV groups and types on suckling pigs from different Canadian provinces (AB, BC, MB, NB, ON, QB, SK).

Materials and methods

Canadian swine veterinarians submitted samples (fresh tissues, fecal swabs, or fecal material) from perinatal (2-5 days of age) diarrhea cases to the Animal Health Lab at the University of Guelph (AHL) for RV confirmation, type identification, and VP7 sequencing. Analysis of the VP7 was performed using Merck Animal Health, Madison, NJ, USASequivity® Dashboard (3).

Results

RV positive samples from 245 diarrheic were sequenced. Individual RV infection summed 148 cases (60.41%), while 44 cases were coinfections. RV-C was present in 46.5%, RV-A in 40.8%, and RV-B in 12.6%. RV A was present in 84% (37/44) of these co-infection cases, followed by RV C in 81.8% (36/44), and RV B in 40.9% (18/44). Sixteen different group types were identified by sequencing of the VP7 protein (5 RV As, 7 RV Bs, and 4 RV Cs). Table 1 presents each RV group/type found per province. Some RV types were specific to a certain region or province. Table 2 displays the participation of each RV group in the co-infection cases. Only ON province observed RV B G18, MB a RV B G25, RV A G11 was only found in AB, RV B G12 was found in AB and SK only, and RV B G16 in MB and ON.

Table 2. Participation by group in co-infection cases (number of cases from the total, percentage from the 44 co-infection cases).

RV Group	# co-infection cases	% in co-infection cases
A	37	84%
B	18	41%
C	36	82%

Table 1. Distribution of RV A, B, and C types by Canadian provinces.

RV Type	AB	BC	MB	NB	ON	QC	SK	Total
A	**27**		**25**		**40**	**1**	**7**	**100**
A G11	1							1
A G3	4		2		2		1	9
A G4	1		1		4			6
A G5	15		3		6	1	2	27
A G9	6		19		28		4	57
B	**7**		**5**		**6**	**1**	**12**	**31**
B G12	2						1	3
B G14	2		1				2	5
B G16			3		2			5
B G17					2		8	10
B G18					1			1
B G20	3				1	1	1	6
B G25			1					1
C	**28**	**3**	**33**	**1**	**25**	**9**	**15**	**114**
C G1	6		3		5	1	2	17
C G5			3		1		4	8
C G6	22	3	26	1	14	6	8	80
C G9			1		5	2	1	9
Total	**62**	**3**	**63**	**1**	**71**	**11**	**34**	**245**

AB: BC: British Columbia; MB: Manitoba; NB: New Brunswick; ON: Ontario; QC: Quebec; SK: Saskatchewan.

Conclusion and Discussion

Rotavirus-related diarrhea in suckling piglets is still a concern for swine industry due to its perinatal damages. Similar to other studies, suckling piglets were mostly infected by only one RV, although co-infections were common.

RV C G6 was the most prevalent RV type in Canada (except ON), followed by RV-A G9 in this study. RV B was the least prevalent strain but was the most diverse among RV groups.

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MSD Animal Health

Efficacy of a new oral anticoccidial to control and prevent coccidiosis (*Cystoisospora suis*) in piglets compared with a commercially available product

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Introduction

The use of anticoccidials in commercial swine farms increases the animal's health, reducing the use of antimicrobials and increasing profits (1,2). This study aimed to evaluate the efficacy of a new oral anticoccidial formulation on preventing and controlling *Cystoisospora suis* through the evaluation of oocysts per gram feces and diarrhea in piglets

Materials and methods

The study was carried out in an experimental swine farm. Fifty newborn piglets were distributed into five groups: Negative Control Group (NCG, n = 10), animals treated with 0.4 mL/Kg BW of 0.9% saline solution; Positive Control Group (PCG, n = 20), piglets received 0.4 mL/Kg BW of toltrazuril (Baycox®, Bayer Animal Health); and New Anticoccidial Group (NAG, n = 20), piglets treated with 0.4 mL/Kg BW of a new oral anticoccidial (MSD Animal Health). Piglets were treated at their third day of life (considered as D0). Animals from PCG and NAG were divided into Preventive Group (PG) which were inoculated with 100,000 sporulated oocysts of C. suis 2 days after treatment and Therapeutic Group (TG) the animals were inoculated with the same number of oocysts one day before treatment, totalizing 10 piglets per group. The NCG animals were also inoculated with the same dose of oocysts, one day before treatment with saline. In 14 times, between 4 and 27 days post-treatment, rectal swab samples were collected from all piglets and a quantitative estimation of oocyst infection was performed (oocysts per gram feces, OPG). In the same days, the animal's feces were classified according to fecal score (1 as solid feces to 4 as liquid feces). Piglets with scores higher than 2 were considered as presenting diarrhea. The results were compared to determine the effect of the treatments on the prevention or control of coccidiosis through analysis of variance (ANOVA) followed by either T-Student test for the OPG or through Fisher test for the number of piglets with diarrhea at each day. The significance level considered was $p \leq 0.05$.

Table 1. Mean OPG for experimental group in piglets

STUDY DAY	New anticoccidial		Positive Control		Negative Control
	Preventive	Therapeutic	Preventive	Therapeutic	
D+4	0[a]	0[a]	0[a]	0[a]	480[b]
D+5	10[a]	10[a]	70[a]	0[a]	1190[b]
D+6	20[a]	0[a]	0[a]	20[a]	2330[b]
D+7	40[a]	40[a]	0[a]	0[a]	4190[b]
D+8	10[a]	10[a]	0[a]	200[a]	63330[b]
D+9	40[a]	30[a]	10[a]	10[a]	161000[b]
D+10	0[a]	0[a]	0[a]	0[a]	25040[b]
D+12	0[a]	0[a]	0[a]	0[a]	6280[b]
D+16	0[a]	0[a]	0[a]	0[a]	1640[b]
D+18	0[a]	0[a]	0[a]	0[a]	300[a]
D+20	0[a]	0[a]	0[a]	0[a]	30[a]
D+22-D+27	0[a]	0[a]	0[a]	0[a]	0[a]

Different letters in a row statistically significant differences within main effect ($p \leq 0.001$)

Results

Mean OPG for each group are shown in Table 1. In whole period, new anticoccidial group piglets regardless to preventive or therapeutic had lower mean OPG than those from NCG ($p < 0.001$) and had similar results in comparison to PCG ($p > 0.05$). At D+4, D+5, D+6, D+7 piglets NCG had higher values of fecal score than those that received preventively or therapeutically the toltrazuril or new anticoccidial formulation ($p < 0.05$).

Discussion and Conclusion

The new anticoccidial formulation was able to keep the decrease the number of oocysts per gram feces and to prevent diarrhea for the entire challenge period compared to negative control group, no harming the growth performance. These results were similar to reported by Maes et al., 2007; Hiob et al., 2019 which the use of anticoccidials in swine farms increases the animal's health and profits.
In conclusion, the new oral anticoccidial has high efficacy on the prevention of coccidiosis on piglets, as well as on the treatment of established infections.

Acknowledgments

Merck & Co., Inc., Kenilworth, NJ, USA.

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MSD Animal Health

Vaccinated pigs against *Lawsonia intracellularis* (Li) presented better productive results at slaughterhouse

AUTHORS:

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Introduction

Intestinal disease is an important cause of production losses in slaughterhouses. Focusing on enteric diseases of swine, as ileitis (caused by Li), impacts may be related to condemnations of white viscera for example (1). It is important to consider other possible losses related to intestinal integrity damage, such as impact on casing (used to sausage production) or even to the carcass.

Objectives

The goal of this study was to evaluate and compare carcasses, white viscera condemnations and casings from animals not vaccinated (NVAC) and vaccinated against Li (VAC) at slaughterhouse.

Materials and methods

The study was carried out in a slaughterhouse located in southern Brazil with animals from 6 different farms nearby: 3 farms with NVAC and 3 with VAC animals (Porcilis® Ileitis, one 2 ml dose at 28 days of age). Evaluations and comparations were performed on animals of the same sex and slaughter age (average of 108 days). Carcass data (n= 1248 NVAC, 1746 VAC) were collected from the slaughterhouse weighing database and information on intestinal condemnations was obtained from the Federal Inspection Service. A total of 430 intestines were collected from each group to assess the casing obtention yield, by calculating the total amount of casings obtained after intestinal cleaning and processing. Mann-Whitney test was used to statistical analysis and p values<0,05 were considered to indicate statistical significance.

Results

There were significantly (p<0,05) better criteria related to carcass in VAC animals, compared to NVAC. Carcasses information means and SD are shown in figure 1. In this study, white viscera condemnations did not differ (p>0,05) between the groups (VAC, 3%, SD±1.73 vs NVAC, 3.33%, SD±0.58). Although there was also no statistical difference (p>0,05) related to the Casing Obtention Yield, there was a numerical improvement in the amount of casing (meters of casing per intestine) obtained from VAC animals. Casing obtention yield means and SD are shown in Figure 2. (21.03, SD±0.09 vs 18.71, SD±0.21).

Conclusions

There was a correlation between slaughterhouse results and vaccination against Li in the animals. These benefits are possibly related to improved intestinal health, consequently protecting the intestinal structure and improving its function.

CARCASS INFORMATION

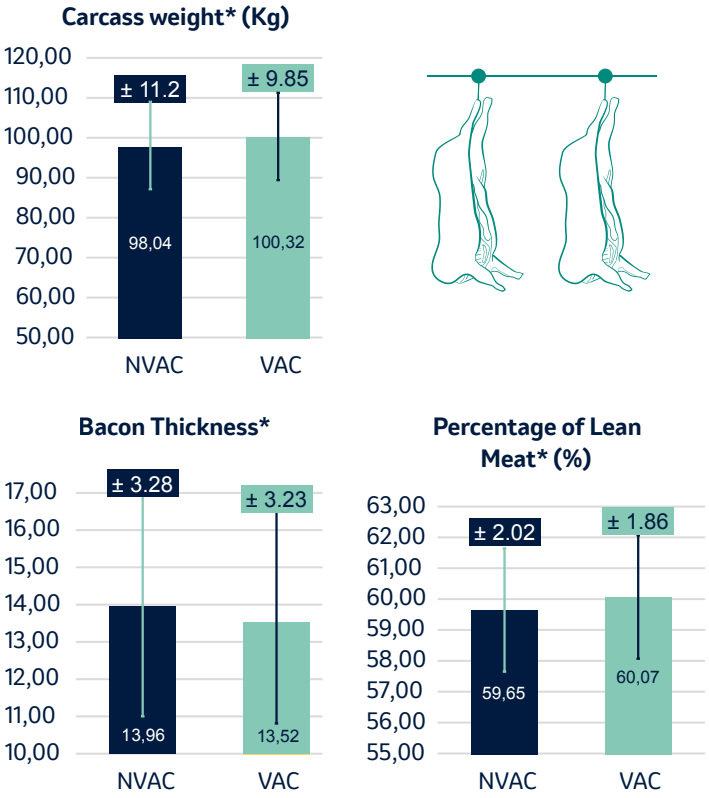

Figure 1. Carcasses information of VAC and NVAC animals

CASING INFORMATION

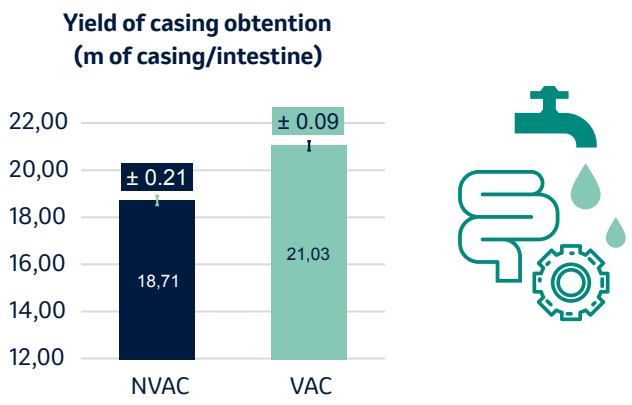

Figure 2. Casing information of VAC and NVAC animals

MSD Animal Health

Vaccinated pigs against *Lawsonia intracellularis* (Li) presented better productive results at slaughterhouse

AUTHORS:

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Conclusions

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CARCASS INFORMATION

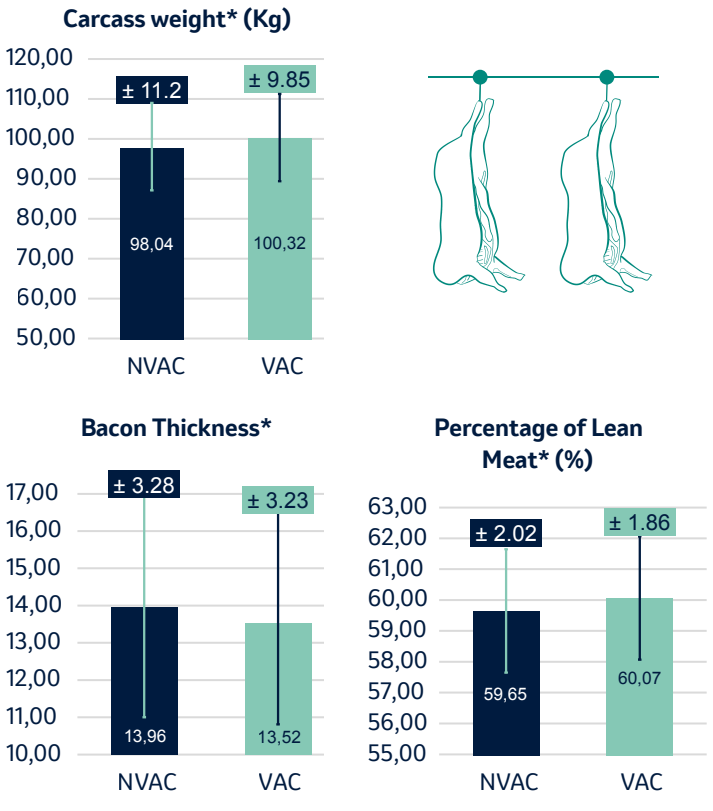

Figure 1. Carcasses information of VAC and NVAC animals

CASING INFORMATION

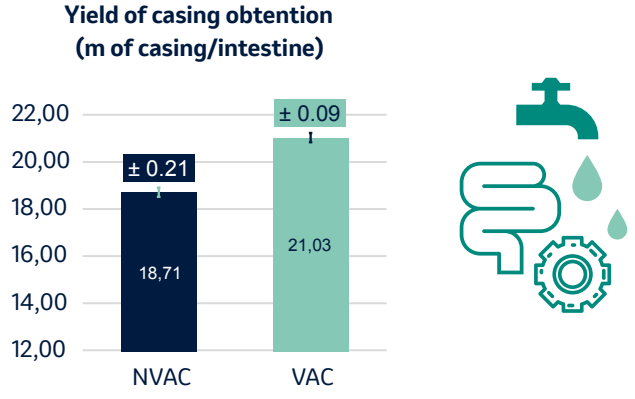

Figure 2. Casing information of VAC and NVAC animals

MSD Animal Health

Intramuscular vaccination against *Lawsonia intracellularis* as a tool to reduce antimicrobial consumption – a case study

AUTHORS:

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Introduction

Proliferative enteropathy in pigs, also known as Ileitis, is caused by *Lawsonia intracelullaris*. This disease may lead to high antimicrobial use in affected herds (1), having an economic impact. Control of Ileitis can be done by antimicrobials, vaccination and optimization of biosecurity and management practices. The aim of this case study was to reduce antimicrobial use by intramuscular vaccination against *L. intracellularis* in a farm with a history of acute ileitis, without an impact on ileitis-associated mortality.

Materials and methods

This case study was performed in a British indoor farrow-to-finish farm with a history of acute ileitis, which was historically controlled by medication with tylosin. A total of 74 batches were investigated between July 2020 and November 2021, allocated to three different control strategies: antibiotic treatment with tylosin for 7 days (T; 18 batches; Jul-Oct2020), antibiotic treatment with tylosin and vaccination with Porcilis®Lawsonia at weaning (T&V; 26 batches; Nov2020-Apr2021), and vaccination alone (V; 30 batches; May-Nov2021). Mortality was recorded at batch level. Antimicrobial Consumption (AMC; mg/kg) was registered using the eMB-pig system from UK. Average Daily Gain (ADG), Average Live Weight at slaughter (LW), and Days to reach slaughter weight (DtS) were recorded at batch level. The intervention cost was calculated per pig sold and per ton of pork sold. Data was statistically analyzed by SPSS software, using Chi-square test for mortality and ANOVA for ADG, LW and DtS. The batch was used as experimental unit.

Results

The mortality was significant lower in the vaccinated group (0.57%) when compared with T (0.90%) and T&V (0.81%) groups (P<0.05) (Table 1). AMC was reduced gradually (T: 64.5mg/kg; T&V: 19.3-62.3mg/kg; V: 18.3-19.7mg/kg), as no clinical signs, nor ileitis-associated deaths were detected after vaccination. ADG was numerically (P=0.078) improved in the vaccinated groups (T&V: 885g/p/d; V: 845g/p/d) compared to treated pigs (T: 785g/p/d). Piglets treated and vaccinated were heavier at slaughter (116.4kg) when compared with T (107.9kg) and V (107.3kg) groups (P>0.05). Pig vaccinated reached slaughter weight slightly faster (V: 164.3d) when compared with T (165.7d) and T&V (166.8d) (P>0.05). The intervention cost was lower in vaccinated pigs when compared to treated pigs (Table 1).

Table 1. Overall results in pigs Treated (T), Treated & Vaccinated (T&V), and only Vaccinated (V).

	T	T&V	V	P-value
Mortality *(%)*	0.90[B]	0.81[B]	0.57[A]	P=0.020
AMC *(mg/kg)*	64.5	19.3-62.3	18.3-19.7	N.A.
ADG *(g/p/d)*	785	885	845	P=0.078
LW *(kg)*	107.9	116.4	107.3	P>0.05
DTS *(days)*	165.7	166.8	164.3	P>0.05
Intervention cost				
£/pig	1.84	1.30-1.81	1.27-1.29	N.A
£/ton pork	1.69	1.07-1.67	1.19-1.67	N.A.

A,B Different superscripts between values from the same row represent statistical differences between groups. N.A. Not applicable

Conclusion and Discussion

Gradual removal of tylosin and replacement by intramuscular vaccination against *L. intracellularis* was demonstrated to be a successful strategy to control ileitis under the conditions of this specific herd. Despite the low level of ileitis-associated mortality seen in all three strategies, vaccination reduced mortality, even after major removal of macrolides. The combined strategy of Treatment & Vaccination provided the best growth performance. However, vaccination alone was demonstrated to be the most economic valuable strategy, being able to reduce the intervention cost per pig and per ton of pork sold, when compared to antimicrobial treatment.

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MSD Animal Health

Intramuscular vaccination against *Lawsonia intracellularis* as a tool to reduce antimicrobial consumption – a case study

Figure 1. Mortality of pigs treated (Tylosin), treated & vaccinated (Tylosin & Porcilis®Lawsonia), and only vaccinated (Porcilis®Lawsonia).

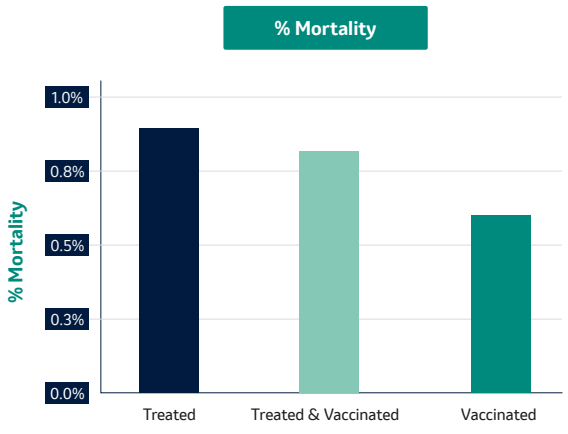


Figure 2. Antimicrobial use (macrolides) per Quarter in pigs treated (Tylosin), treated & vaccinated (Tylosin & Porcilis®Lawsonia), and only vaccinated (Porcilis®Lawsonia).

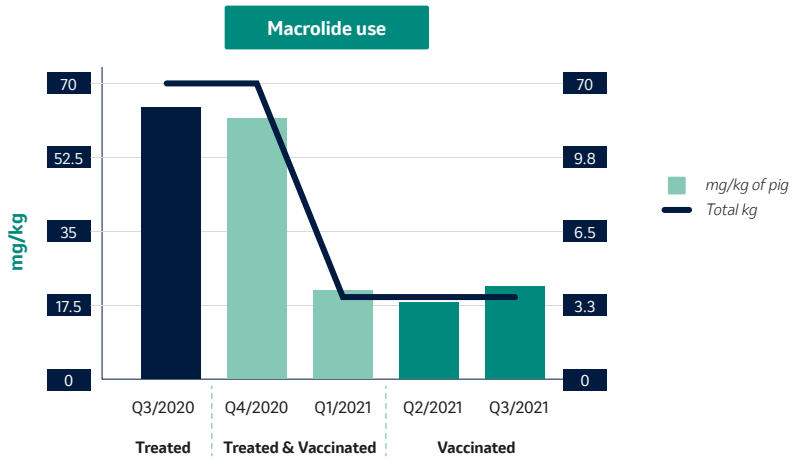
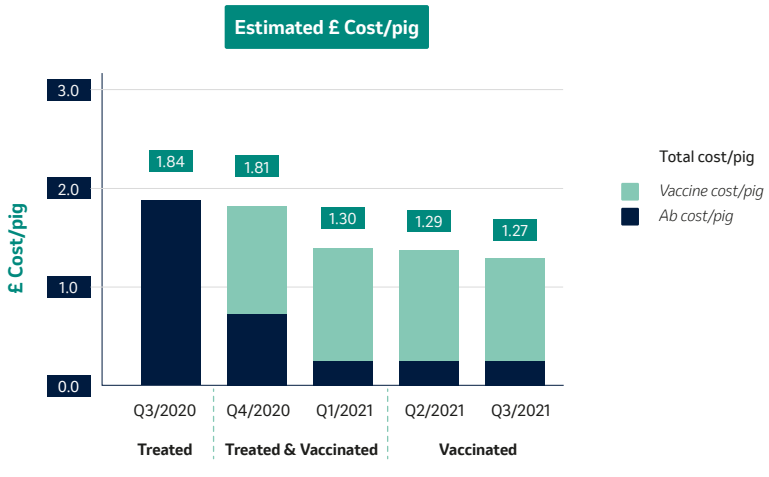


Figure 3. Estimated £ Cost/pig per Quarter in pigs treated (Tylosin), treated & vaccinated (Tylosin & Porcilis®Lawsonia), and only vaccinated (Porcilis®Lawsonia).



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