MSD Animal Health
LATEST RESEARCH

ESPHM - THESSALONIKI- GREECE

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ESPHM 14th EUROPEAN SYMPOSIUM OF PORCINE HEALTH MANAGEMENT

Thessaloniki Greece

MSD Animal Health

INTRODUCTION

The 14th European Symposium of Porcine Health Management (ESPHM) comes together with many challenges facing the swine industry in Europe. The importance of not only producing healthier pigs, but also doing this in a sustainable way is now even more on our minds.

We, MSD Animal Health, are committed on continuing to remain focused on these topics that benefit everyone in the industry. Therefore, as a major scientific contributor for the ESPHM, we prepared a booklet that has all MSD Animal Health presentations covering a wide variety of topics, including health, prevention, and innovative concepts to increase herd efficiency.

The intestinal health section covers improvement of feed efficiency in pigs, novel routes of vaccination against *Lawsonia intracellularis* via intradermal vaccination using IDAL, as well as fundamental research on the virome of weaners.

Respiratory health remains a hot topic for our industry and is part of our identity. As such, we keep working on understanding both the epidemiology and prevention of respiratory diseases.

Improving reproductive performance in swine farms is key to becoming more sustainable and proper gilt estrus detection plays an important role in this. By bringing together technology and innovation, we provide you with a groundbreaking point of care Progesterone kit to manage this process. In addition, we keep working on lactogenic immunity and preventing reproductive diseases through sow vaccination.

All of this research reflects our ongoing commitment to the Science of Healthier Animals.

We wish you a great and sunny ESPHM 2023!!

Sincerely Yours,

Rubén del Pozo

Regional Associate Technical Director,
EURAM - MSD Animal Health

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IntestiPig

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Viral diseases
Changes in the enteric virome around weaning in a healthy pig farm (Part 1)

M. Schyns [1], R. Van Den Braak [2], J. Peijnenborg [2], W. Kuller [3], A. De Groof [2] .

[1]MSD AH Benelux, Boxmeer, the Netherlands . [2]MSD AH D&T, Boxmeer, the Netherlands
[3]University Farm Animal Practice, Harmelen, The Netherlands

Background and Objectives

The postweaning period is a critical stage in the life of pigs, with sudden social, environmental, and immunological changes. Specific changes in the enteric virome before and after weaning were shown between healthy and to-become wasting piglets on a farm with severe post-weaning wasting problems (Folgueiras-González et al., 2021). In the current study, a farm without clinical signs was monitored to analyze if an apparently 'healthy' virome composition of piglets can be corroborated.

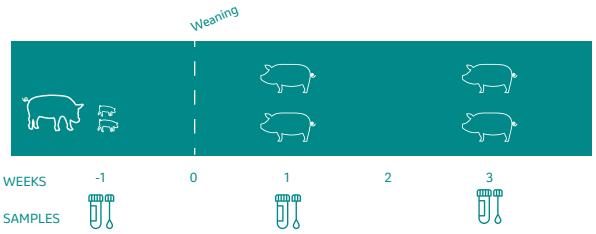
Material and Methods

The farm was selected based on the following criteria:

- No batch treatments with antibiotics before and after weaning for the last six months
- No visible diarrhea after weaning
- Piglets reached at least 25 kg at 10 weeks of age.

A cross-sectional sampling was performed comprising 10 rectal swabs (2 animals per pen/litter) collected before weaning, and 1 and 3 weeks after weaning (see Figure 1).

Figure 1. Sampling scheme: 2 animals per pen/litter were sampled 1 week before weaning, 1 and 3 weeks after weaning.



Two next generation sequencing (NGS) platforms (PathoSense®; VIDISCA) were utilized to characterize the enteric virome composition. The 10 samples were pooled by 5 for the Pathosense platform. Results were semi-quantitatively classified as absent (score 0), very low (score 1), low (score 2), medium (score 3), high (score 4) and very high (score 5). In the VIDISCA platform, the samples were analyzed individually (8 out of 10 samples per age group). The number of viral reads was used to make a semiquantitative classification of viruses present in the samples. qPCRs for Rotavirus (RV) A, C, and Porcine Astrovirus (pAstV) 1-5 were used to obtain qualitative viral loads of the samples 1 week before and 1 week after weaning.

Results

- Before weaning, RVA, pAstV-3, Porcine Kobuvirus, Porcine Picobirnavirus and Porcine Adenovirus were detected by both NGS platforms (see table 1 and figure 3). However, Porcine Kobuvirus despite being the most prevalent virus found, a low number of viral reads (9/1051) were observed (VIDISCA), suggesting a low viral load (genome copies)
- One week after weaning, viral read levels sharply increased (see Figure 2). The number of viral reads in the samples was around 20 times higher.
- One week after weaning there was an emergence of Enterovirus G and a shift from RVA to RVC as well as from pAstV-3 & 4 to types 1, 2, 4 & 5. The genotype shifts for pAstV and RV were confirmed by qPCR (see Figure 4).
- Three weeks post-weaning, the total viral read levels diminished. Although Rotavirus types B & H were still detected, Astroviruses and Porcine Picobirnavirus were predominantly found. Active viremias seem to have settled

A few reads of Bocavirus were detected only in VIDISCA, but they are left out of the results. Although Porcine Teschovirus was detected in both platforms, the low number of reads detected in VIDISCA was the reason to leave this virus out of the results. pAstV type 1 and Porcine Adenovirus are not classified as a separate type in the results from the VIDISCA platform.

Table 1: Results of the Pathosense ® NGS platform shown as combined score for the pooled samples (cumulative score pool samples 1+2).

Score per farm	1 week BW	1 week AW	3 weeks AW
Rotavirus A	6	3	5
Rotavirus B	0	3	10
Rotavirus C	0	10	8
Rotavirus H	0	0	4
Astrovirus	6	10	9
Sapovirus	4	3	5
Picobirnavirus	8	8	9
Enterovirus G	0	10	5
Porcine kobuvirus	9	0	0
Sapelovirus	0	0	6
Porcine adenovirus	6	2	0

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Viral diseases
Changes in the enteric virome around weaning in a healthy pig farm (Part 2)

M. Schyns [1], R. Van Den Braak [2], J. Peijnenborg [2], W. Kuller [3], A. De Groof [2] .

[1]MSD AH Benelux, Boxmeer, the Netherlands . [2]MSD AH D&T, Boxmeer, the Netherlands
[3]University Farm Animal Practice, Harmelen, The Netherlands

Figure 2: Results of the VIDISCA NGS platform the number of total viral reads

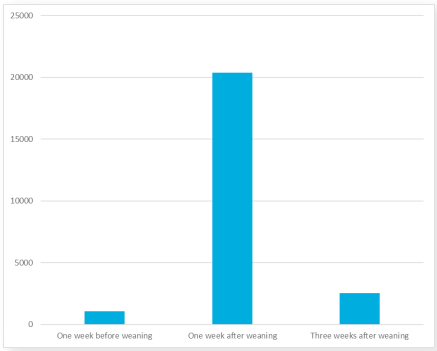


Figure 3: Results of the VIDISCA NGS platform shown as the % distribution of the different viruses related to total viral reads.

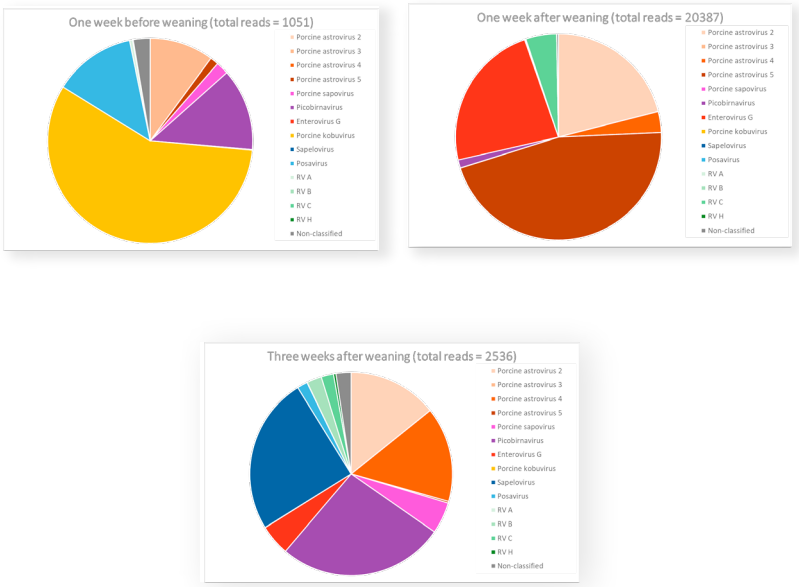
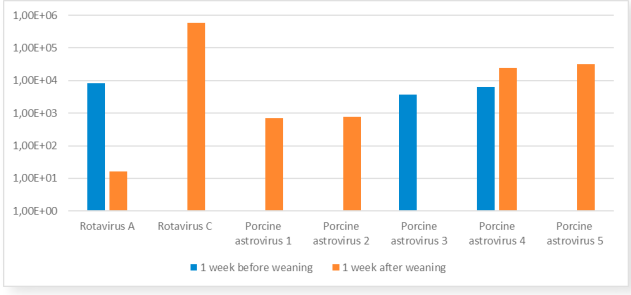


Figure 4. Average genome copies of Rotavirus A (RVA), Rotavirus C (RVC, positive if the load in the sample was more than 10 copies) & Porcine Astrovirus types 1-5 (PAstV1-5) detected in the samples 1 week before and after weaning.



Discussion and conclusion

This study characterized the apparent (healthy) enteric virome of healthy piglets. The pre-weaning stage is characterized by a relatively low number of total viral reads. After weaning there is a sharp increase in the number of viral reads in the samples (VIDISCA). This indicates active viremia of the viruses identified, but importantly this is not immediately associated with effects in health and performance. A clear distinction can be made in the different subtypes of pAstV and the types of RV that are found in time. The results of the NGS-platforms and the qPCRs report similar semi-quantative results/dynamics of the enteric virome around weaning, but we see quantative differences probably caused by the way the samples are processed before analyzing, the sample analysis method itself, and the way the reads are classified. For quantative values, a qPCR remains the best method available and semi quantitative data from NGS platforms should be interpreted with caution.
The composition of the “healthy” virome in this dataset contrasts with the composition of the enteric virome of piglets at risk for wasting disease, which shows high viral load of Enterovirus G and RVA before weaning, and a high viral load of porcine Sapovirus 1 week after weaning. These assumed characteristic indicators of a disturbed enteric virome in weaned pigs were not observed in the healthy population in this study. Therefore, the data add further proof to the assumption that NGS based characterization of virome changes associated to wasting disease should be performed around time of weaning already. The presence of Porcine Adenovirus before weaning was not seen at all at the farm previously investigated. It is known that Porcine Adenovirus can cause mild gastrointestinal and respiratory signs (Benfield et al., 2019). Those clinical signs were not present at this farm during sampling. Of note, pAstV type 1 and Porcine Adenovirus were not specifically classified in the results from the VIDISCA workflow

References

(1) Folgueiras-González A, van den Braak R, Deijs M, Kuller W, Sietsma S, Thuring V, et al. Dynamics of the Enteric Virome in a Swine Herd Affected by Non-PCV2/PRRSV Postweaning Wasting Syndrome. Viruses [Internet]. 2021;13:2538. Available from: https://www.mdpi.com/1999-4915/13/12/2538

(2) Benfield D.A.,Hesse R.A. Adenoviruses. Dis Swine, 11th Ed. 2019. p. 438–42.

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Spread by feces and prevalence of *Lawsonia intracellularis* on Hungarian swine farms A field study

Péter Máté[1] – István Makkai[1] - Hanny Swam[2] – László Ózsvári[3] – László Búza[4]

*[1]MSD Animal Health, Hungary *peter.mate@merck.com, [2] MSD R&D Services Lab, Boxmeer, Intervet International , [3]University of Veterinary Medicine Budapest, Hungary [4]Topigs Norsvin*

Introduction

Ileitis is caused by Lawsonia intracellularis, and its acute, hemorrhagic form might cause death in the susceptible animals; chronic form, "steals" enormous money from our pocket by increasing the FCR (feed conversion rate). Proper vaccination of piglets can control this disease. The aim of this study was to determine the prevalence of Lawsonia intracellularis in the feces, and the age groups where the pathogen spreads via feces in Hungarian swine farms.

Material and Methods

In 2020,2021,2022, a total of 23 Hungarian farms were sampled using the routine MSD CER SBU HU protocol, collecting fecal samples from piglets and fatteners from 4 weeks to 24 weeks of age with 4-week-intervals. From every age group, 3 samples were taken, but every sample was a pool of 5-6 individual fecal samples. The qPCR Ileitis (INGENETIX) laboratory test was done in the CDS, Boxmeer, The Netherlands.

Results

Altogether, 552 faecal samples were collected. In total, 96% of the herds tested positive (at least one sample was positive) by qPCR. The % of positive samples at 4, 8, 12, 16, 20 and 24wk was 0%, 8%, 56%, 65%, 43% and 34%, respectively (Fig.1). On average, 37% of the samples had a bacterial load >3Log10 bacteria/mL of faeces.

Discussion and conclusion

This prevalence study shown that most of Hungarian pig farms (96%) tested positive for *L. intracellularis.* This bacterium was detected from 8wk onwards, reaching a peak of infection between 12-16wk of age. In more than one third of the screened herds (37%), the bacterial load in faeces was high enough to cause a reduction in growth. qPCR is a reliable diagnostic tool to detect ileitis problems. It could be also used to correlate bacterial loads with the retardation in growth caused by this infection.

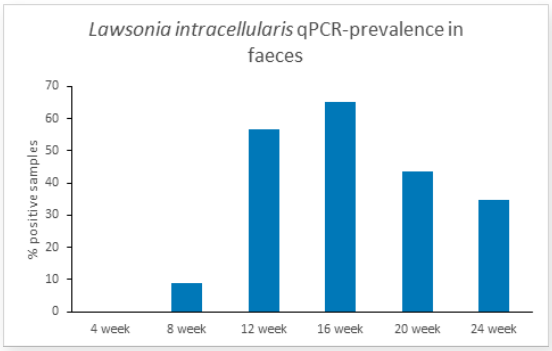

Figure 1. Lawsonia intracellularis qPCR-prevalence in fecal samples

PICTURES

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Importance of *Lawsonia intracellularis* dynamics on the control of ileitis by vaccination on a subclinical infected multi-source fattening farm

Nico Wertenbroek[*1]*; Otto Schreurs*[2]

[1]MSD AH NL, The Netherlands; [2] Advee Ysselsteyn, nico.wertenbroek@merck.com

Introduction

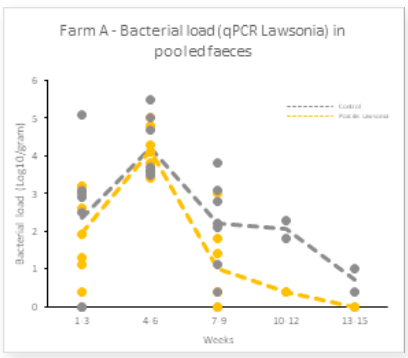
Lawsonia intracellularis (LI) is present on many pig farms in a subclinical manifestation.
This gives challenges to set up a monitoring and control program. The aim of this study is to describe dynamics of LI on a farm with subclinical ileitis infection.

Material and Methods

A Dutch finishing farm (from 10 weeks of age to slaughter) with a history of subclinical ileitis and growth above 950 gr/day was selected. At arrival, pigs (n=2015) from 2 sources were housed in 12 compartments of 168 places (source A and B: 7 and 5 compartments, respectively), in a period of 6 weeks. Pigs were weighted at pen level at arrival. Within each compartment, pigs were randomly allocated to 2 groups in a side-by-side set up: one side vaccinated with Porcilis® Lawsonia (MSD Animal Health) on the day of arrival vs the other side with unvaccinated pigs (control). Saliva and faeces samples were taken every 3 weeks in all compartments and tested for Lawsonia by qPCR (BactoReal Lawsonia) [1]. The ADG and FCR were recorded from arrival until slaughter for both groups in each compartment. T-test was done using compartment as statistical unit.

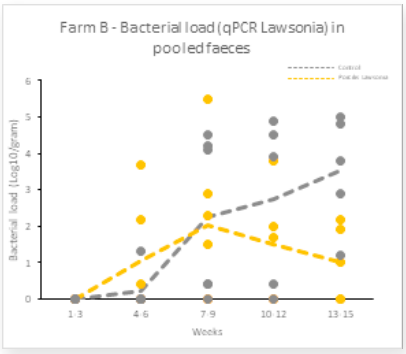
Results

In total 198 times pens samples were collected, of which 110 samples were positive in both saliva and faecal samples.



Graph 1: Average Lawsonia bacterial load for the different compartments from unvaccinated (black) and vaccinated (yellow) pigs against Lawsonia intracellularis, in time (weeks in finishing barn) for piglets from Source A

The LI dynamics of piglets of source A had an earlier onset shortly after setup in the barn, with the peak of infection at 4-6 weeks after arrival; some compartments had already at setup high levels of LI in some of the pens (graph 1).
Piglets of source B had their peak of infection at 7-12 weeks after arrival (graph 2).



Graph 2: Average Lawsonia bacterial load for the different compartments from unvaccinated (black) and vaccinated (yellow) pigs against Lawsonia intracellularis, in time (weeks in finishing barn) for piglets from Source B.

Starting weight at arrival was on average 1.7 kg lower in the vaccinated group. In total, there was an average +23 grams ADG (997 vs 974 g/day; p=0,05) and -0,06 FCR (2,48 vs 2,54; p=0,075) improvement for vaccinated vs control pigs.

Discussion and conclusion

This field data shows the variable dynamic of LI infection between the compartments and also the different piglet sources. Vets should consider this when implementing a monitoring and or vaccination program. For instance, take samples within one age group from multiple compartments. In multiple compartments with piglets from source A, faeces were already PCR LI positive before the onset of immunity by the vaccine [2]. Even in this subclinical infection scenario there was an improvement of technical results in the pigs vaccinated against LI. The extra profit for this farm is calculated on + €2,70 per pig of the vaccinated vs control protocol, based on the improved technical parameters, and feed price of 250€/ton feed, excluded the vaccine cost.

References

(1). Wertenbroek ESPHM 2022.
(2) SPC Porcilis Lawsonia EMA website

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Intradermal vaccination against *Lawsonia intracellularis* decreases bacterial load in feces

Sanna Nikunen, Peter Astrup
MSD Animal Health Nordic, Havneholmen 25, 1561 Copenhagen V, Denmark
e-mail: sanna.nikunen@merck.com

Introduction

Lawsonia intracellularis is a common pathogen in swine farms around the world. It causes diarrhea and poor growth, leading to economic losses. Increasing numbers of *Lawsonia intracellularis* in feces are negatively correlated to average daily weight gain. Intradermal vaccination has proven to be effective against *Lawsonia intracellularis* infection by decreasing bacterial shedding and improving daily weight gain in experimental conditions. The aim of this study was to evaluate bacterial load before and after vaccination in nursery pigs under field conditions.

Material and Methods

Seven sow farms (70 – 1750 sows/farm) participated into study. Before the study started, all farms were examined with sock samples at 9 and 11 weeks of age. One sock sample was a pooled sample from different pens including < 60 pigs. Up to three samples were taken from the same age groups/farm. Second sampling round was made from same age groups after farms had used intradermal *Lawsonia intracellularis* vaccine (Porcilis Lawsonia ID vet, MSD Animal Health) for 3 months. Vaccination age for piglets was 21-32 days. All together 33 samples were collected during the study (July 2021 to January 2022).
The sock samples were analyzed by qPCR in Technical University (first round) and Veterinary Laboratory Kjellerup (second round) in Denmark for *E.coli* F4 and F18, *Lawsonia intracellularis* and *Brachyspira pilosicoli* using the same method.
For statistical analysis paired T-test was performed, considering farm as statistical unit.

Results

Average number of *Lawsonia intracellularis* bacteria in qPCR before study was 6,14 log10 (±1,21) and after vaccination period 4,42 log10 (±1,43) (p-value 0,017). Results are illustrated in figures 1 and 2.

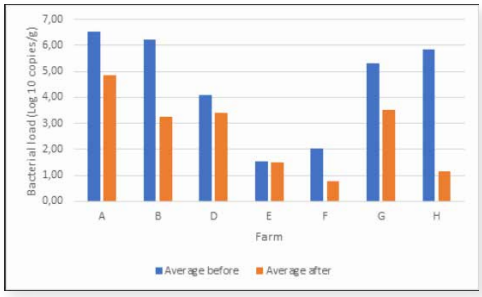

Figure 1. Average Lawsonia intracellularis bacterial load in sock sample from all individual farms before and after vaccination.

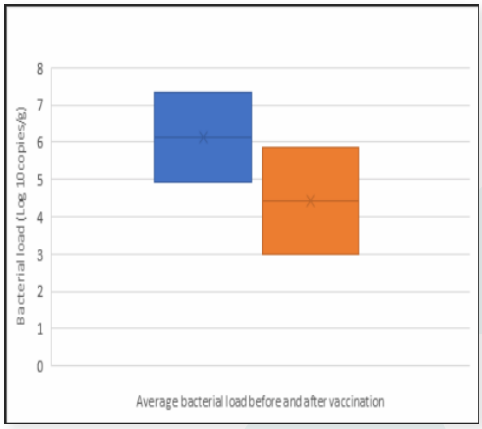

Figure 2. Average Lawsonia intracellularis bacterial load in sock sample before and after vaccination

Discussion and conclusion

In this study we demonstrated that intradermal vaccination against *Lawsonia intracellularis* decreases bacterial shedding in nursery pigs. Difference in these two groups was 1,72 log10. The number of bacteria in feces correlates to severity of disease and by vaccinating you can reduce bacterial load in the gut and consequently symptoms in growing pigs.

Using a novel needle-free intradermal vaccine against *Lawsonia intracellularis* at the beginning of fattening: practical observations on performance in three fattening farms

Christian Nieberding[1], Friederike von und zur Mühlen[2], Robert Tabeling[2], Christine Renken[2]
[1]Practitioner, Tierarztpraxis am Brettberg, Lohne, [2]Intervet Deutschland GmbH; MSD Tiergesundheit, Unterschleißheim, Germany

Background and Objectives

Clinical course of ***Lawsonia intracellularis*** disease varies from acute, chronic to subclinical form. Acute form occurs most often in pigs between 4-12 months and is associated with bloody diarrhea up to sudden death. Chronic forms are described from 6 weeks of age onwards with reduced performance and inhomogeneity in groups of same aged pigs (1,2). After intradermal Lawsonia vaccination a stable immunity can be expected 4 weeks later (3). In practice, therefore, the question often arises whether vaccination at the beginning of the fattening period can still achieve a benefit as it was proven for the intramuscular vaccine in earlier investigations (4).

Material and Methods

Three fattening farms in north-western part of Germany, with a history of acute and chronic Ileitis during fattening, were included. Incoming Danish piglets (appr. 30kg) were vaccinated right after placement with a novel needle-free and intradermal Lawsonia intracellularis vaccine (Porcilis® Lawsonia ID). Performance data of the historical non-vaccinated batches (NV; n= 1711 pigs) was collected and compared with current vaccinated batches (V; n= 1658 pigs). Same type and feed composition were used across the study as well as there were no changes in management issues.

Results

Feed conversion ratio improved in all farms to a different extent (Farm 1: NV: 2.64 vs V: 2.58; Farm 2: NV: 2.84 vs V: 2.57; Farm 3: NV: 2.89 vs V:2.86) and therefore contributed to a reduction in production costs per pig. Reduction in vaccinated pigs compared with non-vaccinated pigs ranged from -0.80 to -6.60 Euro/pig (excluding vaccination costs). In addition, animal losses and antibiotic treatment were reduced in 2 out of 3 farms. In one farm, due to an early and acute clinical Lawsonia-infection outbreak parallel to vaccination, antibiotic treatment was necessary to control disease until full immunity after vaccination was achieved.

Discussion and conclusion

Observations from these case series have shown that vaccination at beginning of fattening (appr. 30kg) can be asufficient measure to control Ileitis during fattening and to improve feed efficiency on farm. Not only in times of high feed prices this helps to reduce production costs. At the same time, it is necessary to vaccinate the pigs early enough before the appearance of clinical issues to fully control the disease after onset of immunity.

Literature
(1)Vannucci et al., Diseases of Swine (2019); (2)Leth Musse et al., Preventive Veterinary Medicine (2023); (3)Jacobs et al. Proc. Helath Management (2020); (4)Mühlen et al., Tierärztliche Umschau (2021)

Figure 1: Ileum of a pig with acute clinical Ileitis during fattening

Figure 2: Group of pigs at same age but different growth (heterogeneous fattening group)

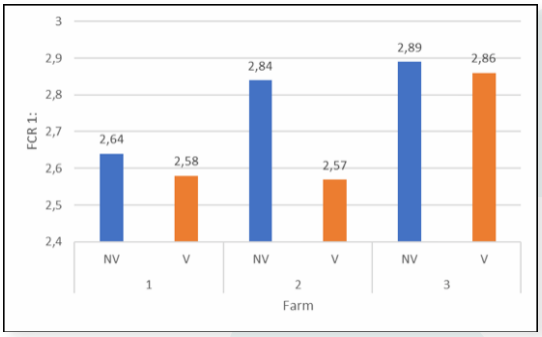

Figure 3: Feed conversion ratio of non-vaccinated (NV) and intradermally vaccinated (V) pigs on the three farms

	Farm 1	Farm 2	Farm 3
Feed costs (€/100 kg)	26.02	27.66	28.88
Financial benefit (€/pig) between non vaccinated and intradermally vaccinated pigs due to…			
Feed costs	-1.53	-7.35	-0.82
Antibiotic treatment	-0.41	+0.30	-0.13
Animal losses	-0.45	+0.44	+0.15
Total benefit per pig	-2.38	-6.60	-0.80

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Control of ileitis in growers and finisher pigs after *Lawsonia intracellularis* parenteral vaccination

Marcial Marcos[1]; Marta Jiménez[1]; Rut Menjón[1]; Cesar Llorente[1]; Maria Luisa Pérez[1], Laura Santos[2], Daniel Serrano[3], Teresa Tejedor[4]
[1]MSD Animal Health, Spain . [2]Campofrío Food Group, Burgos, Spain . [3]Grupo Uvesa, Valladolid, Spain . [4]Facultad de Veterinaria. Universidad de Zaragoza, Spain

Background and Objectives

Lawsonia intracellularis (L.i.) is an intestinal pathogen worldwide distributed, that causes ileitis, an enteric disease that affects pig performance. The aim of this study was to demonstrate efficacy of parenteral vaccination against *L.i.* to control ileitis.

Material and Methods

A herd with a history of clinical ileitis in growers was selected. In total, 10736 piglets, born for 4 consecutive weeks, were allocated at weaning to 3 consecutive groups: C-group (control, unvaccinated, unmedicated against L.i.; n=3300); V-group vaccinated at 4 weeks of age (Porcilis® Lawsonia reconstituted in Porcilis® PCV M Hyo; n=3405); and M-group (water medication with macrolides; n=4031). Group-C and M were also vaccinated against PCV2 and *Mycoplasma hyopneumoniae*. Each group was independently housed in an AIAO fattening barn, under same feeding and management. Entry weight (EW), runts%, mortality%, and antimicrobial usage (per group, in-water; and individual) were recorded. Statistical analysis was done (Chí-square Pearson, Kruskal-Wallis). Average Daily Gain (ADG) and Feed Conversion Ratio (FCR) were also recorded at group level (1 observation) and no statistical analysis was done.

Results

Entry weight was lower in C- and V-group (19.9kg vs. 19.6kg) compared to M-group (21.8kg, $p<0.01$). Runts%, was lower in vaccinated (V=0.4%; $p<0.001$) vs. unvaccinated pigs (M=1.3%; C=3.0%). Lower mortality% was shown in V-group (V=3.2%; $p=0.001$) compared to C=4.5% and M=4.9%. No group medications were needed in C and V, but M-group received 8 medication events ($p<0.001$). Individual treatments were significantly less ($p<0.01$) in V-group than in unvaccinated pigs. ADG (V=862, C=852, M=821) (Fig.1) and FCR (V=2.47, C=2.55, M=2.64) (Fig.2) were improved in vaccinated pigs. Overall results are shown in Table 1.

Discussion and conclusion

In this study, vaccination against L.i. reduced ileitis associated-runt%, -mortality% and -antimicrobial usage in a herd infected with L.i. when compared to water medication. These data complement a trial where subsequent carcass performance was investigated (Marcos et. al, 2023). The current performance results were in accordance with carcass quality improvement at slaughter, suggesting a vaccination benefit in both live pigs and at carcass level.

Table 1. Overall performance parameters in groups Vaccinated (V), Medicated (M) and Control (C)

GROUP	Runts%	Mortality%	#Individual treatments	ADG (g/day)	FCR (Kg)
V	0.4%[a]	3.2%[a]	930[a]	862	2.47
M	1.3%[b]	4.9%[b]	1543[b]	821	2.64
C	3.0%[b]	4.5%[b]	1740[b]	852	2.55
	p<0.001	p=0.001	p<0.01		

[a,b]; different letters in the same column indicate statistical differences

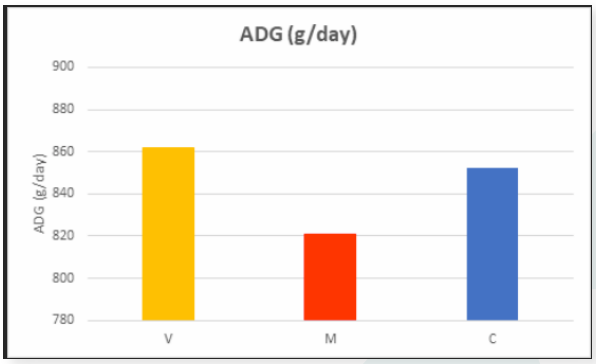


Figure 1. ADG, expressed as grams per day in groups Vaccinated (V), Medicated (M) and Control (C)

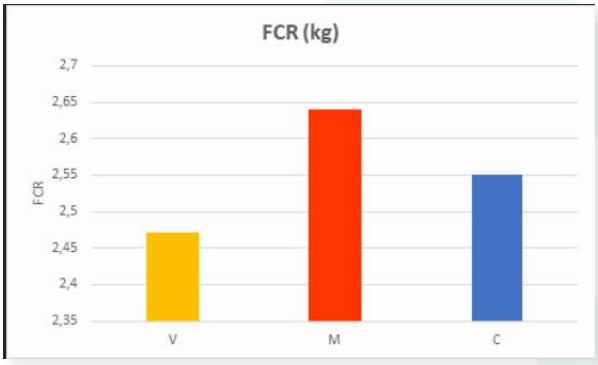


Figure 2. FCR, expressed as kg of feed per kg live weight gained in groups Vaccinated (V), Medicated (M) and Control (C)

MSD Animal Health

Carcass performance at slaughterhouse after parenteral ileitis vaccination

Marcial Marcos[1]; Marta Jiménez[1]; Rut Menjón[1]; Cesar Llorente[1]; Maria Luisa Pérez[1]; Jesús Bollo[1]; Alfredo Romero[1], Laura Santos[2], Daniel Serrano[3], Teresa Tejedor[4]
[1]MSD Animal Health, Spain . [2]Campofrío Food Group, Burgos, Spain . [3]Grupo Uvesa, Valladolid, Spain .[4]Facultad de Veterinaria. Universidad de Zaragoza, Spain

Background and Objectives

Lawsonia intracellularis (L.i.) is a porcine pathogen worldwide distributed that affects intestinal integrity, thus affecting nutrient absorption and growing rates in swine. The effect of vaccination on production parameters has been widely investigated, but scarce data are available about this effect on carcass quality. The aim of this study was to investigate the effect of L.i. parenteral vaccination on carcass quality.

Material and Methods

A farm with history of ileitis in fatteners was selected. One batch of pigs (n=3405) was vaccinated at 3 weeks of age with Porcilis® Lawsonia (reconstituted in Porcilis® PCV M Hyo) and housed in an AIAO fattening unit (group V). A historical comparison was done with the previous batch (n=3300) of unvaccinated pigs (group C; historic control), housed in a different but similar AIAO fattening unit. Performance of live animals was recorded but published in a parallel study (data not shown). At slaughter, main parameters of comparison were recorded: carcass weight (CW); carcass weight range (CWR) [3 categories: small (<75kg), medium, and large (<100kg)]; ham lean % (H); shoulder lean % (S); lean loin % (L). Statistical analysis was done using Mann-Whitney U and Chi-square Pearson tests.

Results

Average liveweight in and out were not different (P>0.05). Significant improvement was detected in vaccinated pigs for all parameters: CW: V=91.6kg, C=89.6kg (p<0.001); CWR: small, V=1.1%, C=2.7%; large, V=14.3%, C=10.3% (p<0.001); H: V=71.9%, C=71.6% (p=0.001); S: V=66.1%, 65.7% (p<0.001); L: V=65.3%, C=65.1% (p=0.002). Overall carcass performance shown in Table 1 and 2.

Discussion and conclusion

In this study improvement of carcass quality was observed after intramuscular vaccination against L.i. The data of this study come from a parallel trial where performance parameters before slaughter were investigated (Marcos et. al, 2023). The results from carcass quality in this study were in accordance with the performance improvement during growing-finishing period, suggesting a benefit of vaccination, not only on performance of live animals, but also at carcass level.

Table 1. Overall carcass performance in vaccinated (V) and control unvaccinated (C) pigs

GROUP	CW (kg)	Ham lean	Shoulder lean%	Lean loin%
V	91.6kg[a]	71.9[a]	66.1[a]	65.3[a]
C	89.6kg[b]	71.6[b]	65.7[b]	65.1[b]
	p<0.001	p=0.001	p<0.001	p=0.002

[a,b]; different letter same column indicates statistical differences.

Table 2. Carcass Weight Range in vaccinated (V) and control unvaccinated (C) pigs

CWR	V	C	
small, less than 75kg	1.1%[a]	2.7%[b]	p<0.001
large, more than 75kg	14.3%[a]	10.3%[b]	p<0.001

[a,b]; different letter same row indicates statistical differences.

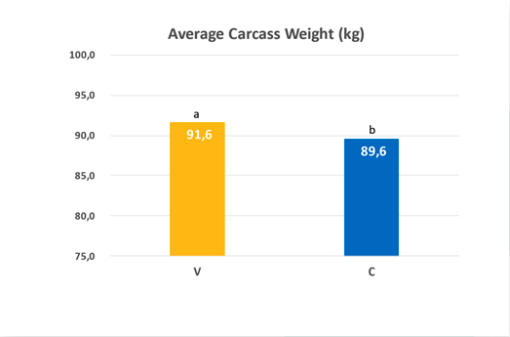


Figure 1. Average Carcass Weight, expressed in kg in vaccinated (V) and control unvaccinated (C) pigs

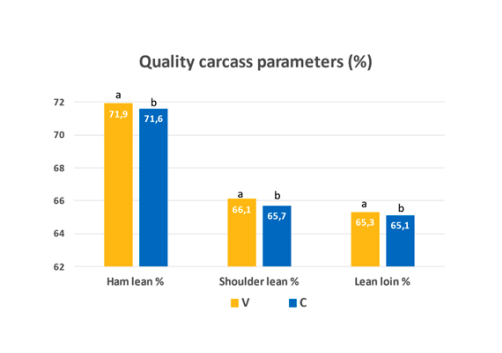


Figure 2. Main parameters related with carcass quality in vaccinated (V) and control unvaccinated (C) pigs.

MSD Animal Health

Variables associated with enteric problems caused by *Lawsonia intracellularis*

M.J. Rivas[1], A. Muniesa[2], M. Jimenez[1], M. Marcos[1], R. Menjón[1]
[1]MSD Animal Health, Spain. [2] Facultad de Veterinaria. Universidad de Zaragoza, Spain
ruth.menjon.ruiz@merck.com

Background and Objectives

Lawsonia intracellularis (Li) is a pathogen with a worldwide distribution. The aim of this study was to identify variables associated with Li infections in Spanish pig farms with a history of enteric problems.

Material and Methods

In total, 2165 individual lab results coming from enteric clinical cases suspected of Li infection internal MSD AH database were included. All these cases were divided in to three categories according to the lab results: confirmed cases of Li infection , doubtful and negative. Variables from the anamnesis data w ere also included in th e analysis: area, genetic, animal age, health, sample, diagnostic test, individual sample or pool samples. Additionally, a questionnaire on herd management was conducted by technicians on 169 farms ,including the following variables feeding type , number of feeders, treatment, water quality, facilities , vacancy period, other enteric pathologies gilt vaccination against ileitis, enteric diseases strategies.
A dependency relationship study was carried out between lab results and the above variables. ANOVA test was performed , considerin g $P<0.050$ as significant. The qualitative variables were described with their distribution of absolute and relative frequencies, regarding the inferential analysis, the association of two qualitative variables was evaluated with the Pearson Chi-square test (X2) and, in if more than 20.0% of the expected values were less than 5, The Likelihood Ratio (LR) test was used as an alternative test. P rogram IBM SPSS version 19.0.

Picture 1. Pigs with clinical signs associated to Ileitis

Picture 2. Pigs with clinical signs associated with Ileitis

Results

A dependency of variables has been described according to the likelihood ratio, which has shown us the correlation between the variables. The variables that have significantly shown a dependency relationship were described between the following:

Table 1. Survey Variables

P	Number of feeders	Treatment	Water Quality	Facilities	Vacancy Period	Other Enteric pathologies	Gilt Vaccination against Ileitis	Enteric Diseases Strategies
Feeding Type	0.010	0.270	0.542	0.408	0.662	0.751	0.016	0.144
Number of feeders		0.341	0.085	0.016	0.480	0.294	0.024	0.277
Treatment			0.032	0.025	0.538	0.329	0.255	0.324
Water Quality				0.958	0.080	0.911	0.122	0.957
Facilities					0.816	0.021	0.669	0.352
Vacancy Period						0.449	0.784	0.046
Other Enteric pathologies							0.142	0.958
Gilt Vaccination against Ileitis								0.002

Table 2: Laboratory results vs anamnesis variables

P	Lab. Result
Sample Lab.	RV 0.004
Diagnostic Lab.	X2 0.007
individual/Pool	X2 0.026

Table 3: Laboratory results vs survey variables

P	Feeding Type	Number of feeders	Treatment	Water Quality	
Lab. Result	0.136	0.336	0.227	0.081	
P	Facilities	Vacancy period	Other Enteric pathologies	Gilt vaccination against Ileitis	Enteric Disease Strategies
Lab. Result	**0.028**	0.544	0.488	0.631	0.301

Discussion and conclusion

Li has a prevalence in the samples of 72%, coinciding with the literature.Several variables were positive associated with the detection of Li, including the type of facilities, the presence of other enteric pathologies and the type of samples and tests selected for diagnosis. The type of facilities used on the floor is usually slatted. A significant correlation of this type of flooring has been found with certain farm factors such as the number of feeders, the treatment of drinking water and the presence of other concomitant enteric pathologies. Statistical differences were also found that influence obtaining a correct result in the laboratory, such as taking the correct samples, choosing the correct type of diagnosis, or deciding in a group of animals if it is better to make an individual diagnosis or in a pool, which will be an important point to consider when making a correct diagnosis in the event of a suspected ileitis problem.
However, there were other variables that were not associated, such as type of diet, water quality or genetics. This study has shown the importance of objectively knowing the variables that can influence the appearance of enteric pathologies, specifically ileitis, when it comes to establishing a good diagnosis and effective control measures.

MSD Animal Health

ResPig

MSD Animal Health

Occurrence of early post-weaning PCV2 infections in danish piglets

M. Qvist Pawlowski [1], A.K. Ballebye Lind [1], T. Hovmand [2]
[1]MSD Animal Health, Copenhagen, Denmark. [2]Danvet K/S

Background and Objectives

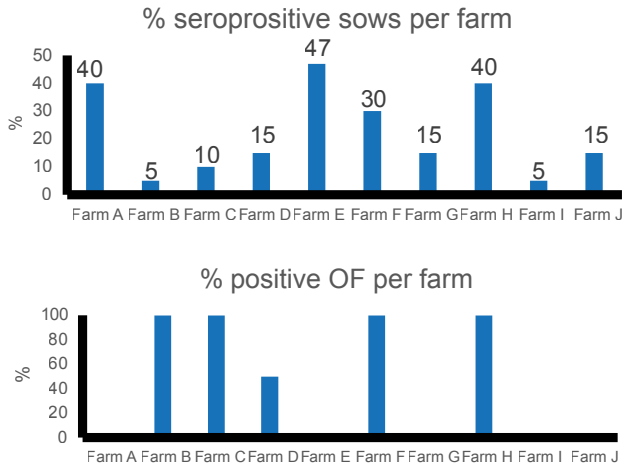
In times of economic crisis, maximization of ROI in pig farming, such as vaccination cost, are more in focus than ever. For PCV2 vaccination, the optimal effect can be disturbed if viremia occurs already at the time of vaccination, caused by an un- controlled PCV2-infection in sows. This study investigated the occurrence of early PCV2 infections in piglets and the sow sero-positivity in PCV2-non-vaccinating sow herds.

Material and Methods

Ten Danish herds with a history of reproductive problems and/or suspicion of early piglet PCV2 infections were selected. Oral fluid (OF) samples were collected from piglets aged one-and two-weeks post-weaning in each herd. For each age group, two samples were collected and pooled in one. Virus circulation was determined in OF by qPCR testing for PCV2. Furthermore, blood samples were collected from 20 sows (no gilts) per herd and analyzed individually by AlphaLISA (in-house method) for PCV2-antibodies and by qPCR for PCV2-viremia. All laboratory analyses were performed at the Center for Diagnostic Solutions, MSD Animal Health.

Results

PCV2 virus was detected in OF from weaned piglets (in at least one age group) in 50% of the herds (cq-values ranged 23.72-34.12). All herds (100%) had at least one seropositive sow. The overall sow seroprevalence was 22%. Within-herd seroprevalence ranged from 5-47%. PCV2 viremia was only found in two sows from 2 different herds (one sow/herd), with viral levels below quantification limit.



Top figure describes the percentage of seropositive sows per farm. Bottom figure shows the percentage of positive OF samples per farm

Discussion and conclusion

In this study, early post-weaning PCV2 circulation was found in 50% of sampled herds, which potentially could affect the efficacy of PCV2-vaccination around weaning. Five to 47% within-herd sow seroprevalence could suggest a suboptimal immunity against PCV2, and consequently, susceptibility of sows for PCV2 reproductive disease. Therefore, it is advisable to monitor PCV2 immunological status and PCV2 infection in sows and piglets to avoid reproductive issues and optimize vaccination timing. Sow vaccination is a tool that may be useful in this scenarios with early post-weaning PCV2 infection.

MSD Animal Health

Update on *Actinobacillus pleuropneumoniae* serotype's prevalence in Spain

M. Jiménez[1], R. Menjón[1], M. Marcos[1] ,
[1] MSD Animal Health, Spain
marta.jimenez@merck.com

Introduction

Actinobacillus pleuropneumoniae (App) is a bacterium that can be found worldwide. There are up to 20 serotypes described, and its prevalence and/or pathogenicity can vary from country to country.

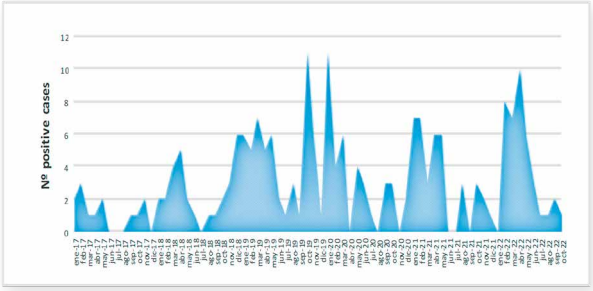
The aim of this study was to enlarge the available information about the serotypes involved in clinical cases in Spain, as well as to evaluate its possible temporary evolution.

Material and Methods

A total of 210 isolates of App, coming from retrospective clinical cases from 2017 to October 2022, were analyzed in 5 Diagnostic Labs located in different areas of Spain. Among them, typing of the serotype was done in 168, using mostly a serotype-specific PCR. The seasonality of cases, the most prevalent serotypes as well as its temporary evolution were studied.

Results

A clear correlation of prevalence of App cases and seasonality was not found (Graph 1)



Graph 1. Number of positive cases per month

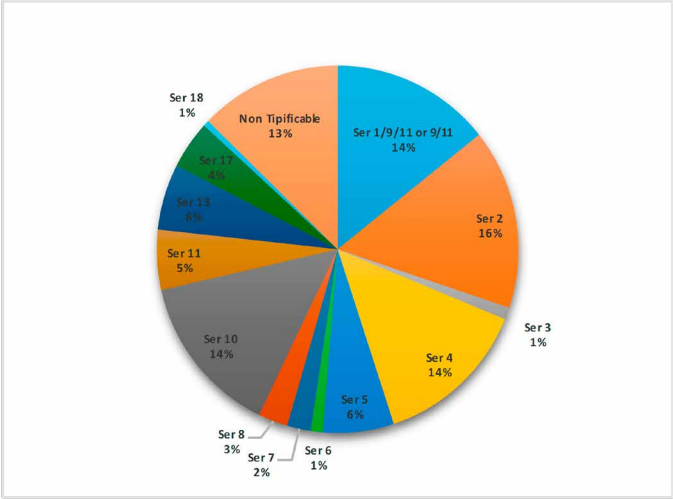
The most prevalent serotypes found were 2 (16%), 1/9/11 or 9/11 (14%), 4 (14%) and 10 (14%) (Graph 2).

Serotype 2 was the most prevalent in 2018, 2019 and 2022, and 9/11 in 2017 and 2021. In 2020 both serotypes 2 and 9/11 were equally found.

Except for serotype 10, that was only found in one specific area of Catalonia, the rest of the most prevalent serotypes were found all around the country.

Less prevalent serotypes were 3, 6 and 18, found only in 2, 2 and 1 cases respectively. This data differs from previous studies were serotypes 6 and 18 had not been found before.

The only serotypes not found were 1, 12, 14, 15 and 16, coinciding with previous reports.



Graph 2. Prevalence of App serotypes

Conclusion

The results of this retrospective study indicate that most App serotypes are found in Spain and related to clinical cases. These data differ to other European countries, where serotypes 3 and 10 are rarely found and serotype 4 is not usually linked to clinical cases.

MSD Animal Health

Serological responses after vaccination with Porcilis® PCV M Hyo variodose

M. Schyns [1], S. Agten [1], T. Verbrugge [2], T. Cruijsen [1]
[1]MSD AH Benelux, Boxmeer, the Netherlands , [2]De Oosthof, The Netherlands

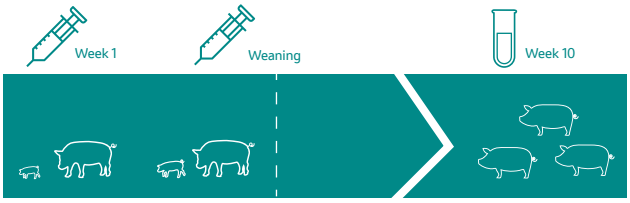
Background and Objectives

A serological response against *Mycoplasma hyopneumoniae* (*M. hyo*) is found in approximately 40-50% of the piglets after vaccination with a single-dose of Porcilis® PCV M Hyo (Witvliet et al, 2015). Serological response is often used for monitoring infections of piglets, especially when piglets are sold at 10 weeks of age. After a two-dose vaccination regime our hypothesis is that more piglets will have antibodies for *M. hyo*.

Material and Methods

Six farms in the Netherlands and Belgium were included in this study. All had the same vaccine scheme, ie. piglets were vaccinated in the first week of life with 1 ml of the vaccine and a few days before weaning again (1 ml). Three times a year, ten pigs of 10 weeks of age were bled for monitoring the serological response. For the timeline see figure 1.

Figure 1 : vaccine scheme



Samples were analyzed for Porcine Circo Virus type 2 (PCV2) and M. hyo antibodies at the Centre of Diagnostic Solutions in Boxmeer using in-house ELISA for antibodies against PCV2 and IDEXX ELISA for *M. hyo*.

Results

In total 238 samples were collected. Antibodies against PCV2 were found in 95,4% of the samples. The titers are shown in figure 2. For *M. hyo* 52.1%, 12.6% and 35.3% of the samples were positive, doubtful and negative, respectively. The S/P-ratios are shown in figure 3. There was a spread in the number of positive samples from 1 to 10 per collection of ten samples. The number of positive samples variated within farms during the monitoring period.

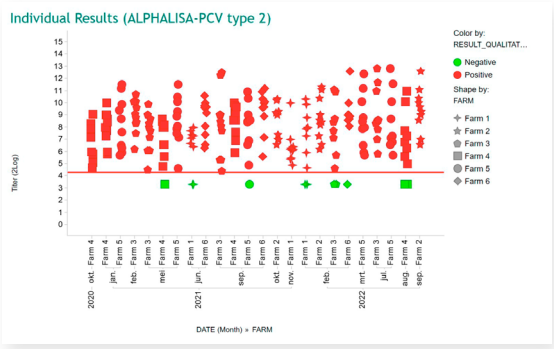


Figure 2: individual titers of the in-house ELISA for antibodies against PCV2 grouped per farm and sampling moment. The red line (4.3 log 2) is the cut-off between negative and positive.

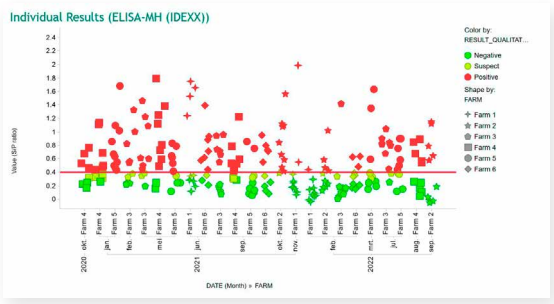


Figure 3: individual S/P-ratio's of the IDEXX ELISA for antibodies against M Hyo grouped per farm and sampling moment. The red line (0.4) is the cut off value for positive samples.

Discussion and conclusion

As shown by Witvliet et al., 2015, 46% of vaccinated animals became *M hyopneumoniae seropositive* at 4 wpv. Therefore, a big variation in the number of positive samples is expected, as reflected by this data. As shown in Fig. 3, 52% of vaccinated animals became *M. hyo* seropositive at 10 weeks of age. The variation over time can be seen as a normal variation and might be slightly higher due to the split dose. However, the results might also be influenced by maternal derived antibodies, infection with *M. hyo* and maybe other co-infections. The serological response after vaccination against PCV2 was more consistent than against *M. hyo*. However, humoral antibody immune response against PCV2 may be elicited either after vaccination or after contact/infection with PCV2. Therefore, serology alone is not a suitable tool for

1. Witvliet M, Holtslag H, Nell T, Segers R, Fachinger V. Efficacy and safety of a combined Porcine Circovirus and Mycoplasma hyopneumoniae vaccine in finishing pigs. Trials Vaccinol. 2015;4:43-9.

MSD Animal Health

PRRS piglet's vaccination as a tool to reduce mortality in nursery phase

M, Coma[1], R. Menjón[2], M. Marcos[2], M. Jiménez[2]
[1] ALBET ; [2] MSD Animal Health.
marta.jimenez@merck.com

Introduction

The aim of this study was to demonstrate piglet vaccination with a PRRS MLV vaccine as an effective and profitable tool to reduce mortality related to PRRSV-induced respiratory disease.

Material and Methods

The trial took place in a 250-sow farm (site 1+ site 2) working in a two-week batch system. Piglets were weaned at 4 weeks of age and moved to a nursery, where they stayed 5 weeks more. The breeders were PRRSV positive (vaccinated with PRRS MLV every 4 months) and although there was not an evident outbreak in sows, PRRSV recirculation was detectable by positive rt-PCR at 4w of age. Mortality in nursery phase was linked to respiratory disorders, reaching peaks of 16%.

A total of 2310 piglets (9 batches) were intradermally vaccinated at 2 weeks of age (Porcilis® PRRS, MSD Animal Health; March to July 2022). Also, management changes were implemented, improving internal biosecurity, including improvement of cleaning and disinfection procedures, cross-fostering limited to the first 24h, and AIAO policy.

Efficacy of vaccination was determined by comparing mortality rates of nursery phase before and after the introduction of piglet vaccination. Reproductive parameters from the breeders were also recorded. Statistical analysis was done via ANOVA test (IBM SPSS Statistics 26.0 software package; IBM Corp., Armonk, NY, USA; significant level p=0,05).

Results

Total mortality % in the nursery was significantly reduced, from 14,3% in non-vaccinated to 8,71% in vaccinated (p<0,02).
Respiratory disease-associated mortality was also significantly reduced, from 14,3% to 4,78% (p<0,001).
Total born and born alive piglets were significantly higher after piglet vaccination was implemented (p<0,05), and dead born piglets were lower (p<0,01).

All results are summarized in Table 1.

Table 1. Performance parameters before and after PRRS vaccination

	Pre-vac	Post-vac	
Total Born (piglet/sow)	16.35	17.39	p<0.05
Born alive (piglet/sow)	13.88	15.40	p<0.05
Dead Born (piglet/sow)	2.47	2.00	p<0.01
Weaned (piglet/sow)	11.35	11.76	n.s.
Nursery Total mortality%	14.30	8.71	p<0.02
Nursery Resp mortality%	14.30	4.43	p<0.001

Regarding profitability, based only on the reduction of respiratory mortality, an extra benefit of 4,17€ per piglet was obtained.

Conclusion

In this trial, piglet vaccination with Porcilis® PRRS together with an improvement of internal biosecurity and management were efficacious and profitable strategies to reduce mortality in nursery phase due to PRRSV infection. It was hypothesized that the subsequent improvement in sow performance was probably due to the positive effect of piglet vaccination and optimization of management on PRRS stabilization at herd level. However, it is not possible with the presented data to determine the impact of vaccination and/or biosecurity improvement on the final outcome.

MSD Animal Health

ReproPig

MSD Animal Health

Correlation between the assessment of the reproductive system in gilts and the levels of Progesterone (P4), for the control of reproductive problems

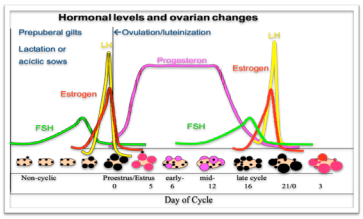
M.V. Falceto[1], A. Vela[2], M.Collell[3], M. Jimenez[3], M. Marcos[3], R. Menjón[3].
[1]Reproduction and obstetrics Area. Animal Pathology Department, Universidad de Zaragoza. [2] ThinkinPig SL.
[3]MSD Animal Health ruth.menjon.ruiz@merck.com

Introduction

- Reproductive management in gilts and sows is key for the optimal productive and economic performance of a farm.
- When a reproductive problem appears, it is important to know at what point in the estrous cycle the gilt/sow is in order to act and solve it.
- Early detection of possible failures is essential to apply corrective measures: management, nutrition, hormonal treatments (gonadotropines, altrenogest).
- The option that we usually use is to take some gilts/sows to the slaughterhouse and study the reproductive tracts.
- A simpler possibility could be to measure progesterone levels and know the moment of the estrous cycle.

Background and Objectives

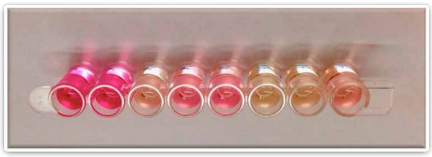
P4 levels can be determined for individual animals to verify the accuracy of heat detection, the estrous status of a population or to ensure appropriate hormone intervention. The objective of this trial was to evaluate a new rapid blood progesterone kit by comparing it to a laboratory-based progesterone assay and to the reproductive status of the gilt as measured by postmortem examination of the reproductive tract.



Material and Methods

In total, 57 replacement gilts were selected at different stages of their reproductive cycle, all coming from the same farm, feeding and management program. At slaughter a blood sample was obtained for P4 determinations [P4 scoring, negative<2.5ng/mL; intermediate 2.5-5.0ng/mL; positive>5.0ng/mL, the quantitative results were divided into three groups to facilitate the relationship between the tests since only one is quantitative] using these two tests:

- Progesterone laboratory study: analytical method PNT-HOR-30409 (ELFA reference technique; ng/mL)
- Biovet Progesterone Kit (Ovucheck premate porcine). It is a farm test. It is possible to use serum or plasma from the collected blood samples, serum samples were used in this study, and it is a competitive semi-quantitative ELISA, where color is inversely correlated to P4 concentration (ng/mL).



Picture 1: P4 test interpretation. From left to right: wells 1 and 2 were "negative test standard"; 3, 6 and 7 tested positive; 4 and 5 tested negative; 8 tested intermediate.

After slaughter, the reproductive tracts were collected, and ovaries were examined both macroscopically and microscopically to confirm the presence of luteal tissue. Ovaries, when corpora lutea is present are indicative of diestrus and progesterone levels will be high. Therefore, they were considered as positive. Whereas ovaries presenting follicles larger than 6 mm and corpus albicans are indicative of proestrus-estrus and progesterone levels are very low. Therefore, ovaries without corpora lutea were considered as negative.
A comparison was made to determine the correlation between the P4 tests and ovarian status. The statistical correlation between the 3 methods was tested by a two-by-two comparison, using the chi square test of independence, the intensity of the relationship is measured by the Phi value, this value is interpreted in the same way as a correlation (Phi ranges from -1 to +1) and Cramer's V values range from 0 to +1; a value of 0 indicates no association and a value of 1 indicates complete association

Picture 2: Ovary with corpus luteum

Results

Using the laboratory reference test, the number of negatives and positive samples were 35 and 22, respectively. For the rapid Biovet on farm test similar results were obtained: 35 negatives, 2 intermediates and 20 positives; and finally with the repro tracts study 36 samples tested negative and 21 positives. A strong relation was found in all three comparisons: when compared status of the ovary vs laboratory reference, it was seen that both tests were strongly related Phi=0.963 ($p<0.001$); when compared status of the ovary vs Biovet kit, there were strongly related too, Cramér´s V=0.981 ($p<0.001$); and the same was found in the comparison between laboratory test and Biovet kit, Cramer´s V=0.981($p<0.001$).

Discusion and conclusion

There was a strong correlation between the status of gilt reproductive tracts, lab tests to assess P4 levels and rapid Ovucheck kit for use on farm. Therefore, either of the two P4 tests to determine cycle status of individual gilts or sows can be used, without the need to send gilts or sows to slaughter.

MSD Animal Health

SowCare

MSD Animal Health

Presence of non typically swine Leptospiras on Hungarian swine farms A field study

Péter Máté[1] – István Makkai[1] – Miklós Gulyás[2] - László Ózsvári[3] – László Búza[4]

*[1]MSD Animal Health, Hungary *e-mail: peter.mate@merck.com. [2]A.L.M. Company. [3]University of Veterinary Medicine Budapest, Hungary . [4]Topigs Norsvin*

Introduction

Leptospiras are present all around the world. Classical Leptospira serovars cause disease in swine (eg. Leptospira pomona, tarassovi and/or bratislava serovars). However, non-typically swine Leptospiras: Canicola, Icterohaemorrhagiae, or Gryppotyphosa, can also negatively effect reproductive parameters. The aim of this study was to reveal the presence of different serovars on Hungarian pig farms.

Material and Methods

In total, 15 Hungarian breeding herds were sampled. Ninety blood samples were collected from sows from different parities in each herd, including sows from 6 different groups: around insemination; at 3rd, 6th, 9th, 12th week of gestation; and at farrowing. The samples were taken randomly from healthy looking animals. MAT testing was performed at the lab including 7 Leptospira serovars.

Results

In total, 4 out of 15 farms (26%) tested positive for at least one serovar. Altogether, 1350 sows were screened. The overall prevalence was 1%. From the positive samples, the following serovars were found: Pomona (62%, Bratislava (8%), Canicola (8%), Icterohaemorrhagiae (8%), Gryppotyphosa (8%), Sejroe (8%) and Tarassovi (0%).

Discussion and conclusion

This Leptospira screening in Hungarian farms revealed the presence of both, common and non-typical Leptospira serovars infecting pigs. The prevalence shown in this study is low (26% of positive farms). Reasons for this include the random selection of healthy sows. A sampling of problem sows targeting them immediately after reproductive failure would have increased the power of detection and the overall prevalence. This has been corroborated in previous European studies and highlights the importance to follow these guidelines in further studies to reduce sampling and diagnostics costs. All these serovars should be included in the differential diagnosis when Leptospira is suspected and reproductive failure present.

Pictures and Figures

Minta sorszáma: 1
Vizsgálat iránya: Leptospira grippotyphosa ellenanyag
Eredmény: Pozitív 1db

MSD Animal Health

Comparative historic evolution of *Leptospira* vaccination under field conditions

Marcial Marcos[1]; Marta Jiménez[1]; Rut Menjón[1]; Jesús Bollo[1]; Alfredo Romero[1], Javier Fernández Román[2], Jose Quirino Cabañes[2], Teresa Tejedor[3]
[1]MSD Animal Health, Spain. [2]AGROCESA S.A.U., Vall Companys Group, Spain. [3]Facultad de Veterinaria. Universidad de Zaragoza

Background and Objectives

Leptospira sp. pathogenic serovars as Bratislava, Pomona and Icterohaemorrhagiae, affect swine reproduction performance in terms of farrowing rate. Several studies have been published demonstrating the efficacy of a multivalent *Leptospira* vaccine (Porcilis® Ery+Parvo+Lepto), but there are no studies considering long term results. The aim of this study was to demonstrate the efficacy of *Leptospira* vaccination to control subclinical *Leptospira* infection under field conditions.

Material and Methods

A group of 3 sister breeding herds belonging to the same owner were included in this study. All farms (2800 sows/herd) shared same location, facilities design, management, sanitary programs, genetics, semen and feeding source. Therefore, they were considered as equals for comparison. Subclinical leptospirosis (Serovar Bratislava) was diagnosed by MAT assay in sows with reproductive failure, and farm data analysis revealed an increased irregular return-to-estrus % in farm-V, hence starting sow vaccination (two doses 4-weeks apart and subsequent boosters every 6 months) against *Leptospira*. A second farm, without reproductive disorders nor MAT seroconversion was considered as negative control (NC), whereas a third one with reproductive failure and MAT seroconversion against Bratislava was considered positive control (PC). Farrowing rate (FR%) was recorded and compared between two periods (PRE-V, 24 months before the start of sow vaccination in farm-V; and POST-V, 24 months after second dose) in all 3 herds. Statistical analysis was done using ANOVA.

Results

Only Farm V had an improved FR% between PRE-V and POST-V periods (PRE-V=87.0%, POST-V=88.7%, P<0.05) (Fig. 1). Farrowing rate was significantly higher in NC compared to V during PRE-V period (V=87.0%^{A}, NC=89.2%^{B}, PC=87.9%^{AB}; P<0.05) (Fig. 2). However, in POST-V period, FR% in NC and V was significantly higher compared with PC (V=88.7%^{A}, NC=89,2%^{A}, PC=87%^{B}, P=0.001) (Fig. 3).

Discussion and conclusion

This long-term study showed an improvement in farrowing rate under field conditions. The biological relevance of these results should be put into context, considering the high performance of all 3 units with limited margin of improvement, and the limitations on the study design.

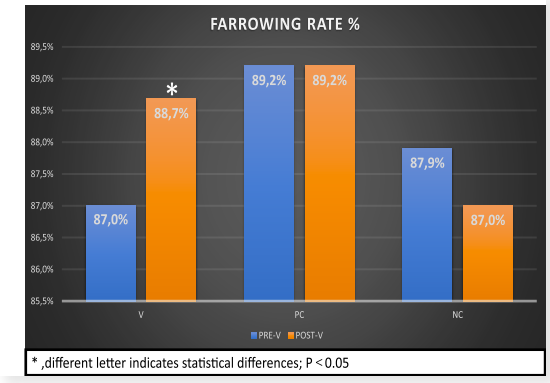


Fig.1 : Farrowing rate. Overall results expressed in percentage.

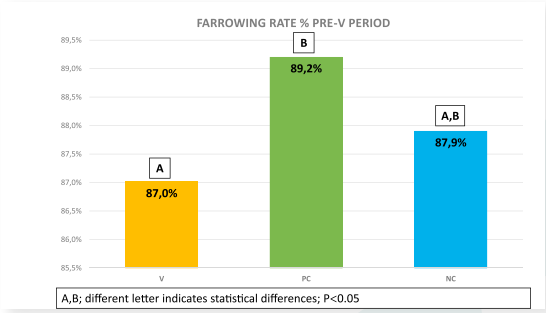


Fig.2 : Farrowing rate during pre-vaccination period. Overall results expressed in percentage.

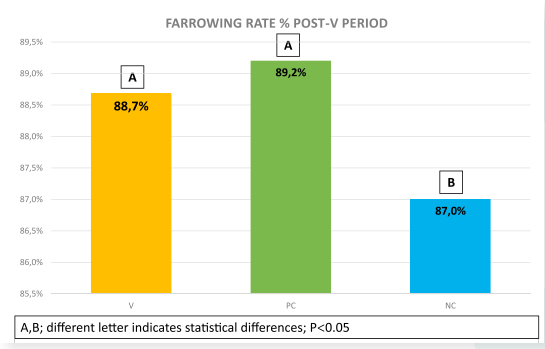


Fig.3 : Farrowing rate during post-vaccination period. Overall results expressed in percentage.

MSD Animal Health

Vaccination as a tool to control recurrence of leptospirosis after an acute outbreak

F.Soto[1] , R. Menjón[2], M. Marcos[2] ,M. Jiménez[2]
[1]Piensos Maqueda SA.; [2] MSD Animal Health, Spain.
marta.jimenez@merck.com

Introduction

Leptospirosis is a common infection that causes reproductive disorders. *Leptospira* is a persistent bacterium, being very frequent to have recurrent reproductive disorders after an acute outbreak, despite of antibiotic treatment. The objective of this work was to evaluate the efficacy of vaccination against *Leptospira* as a tool to control recurrence of the diseases after an acute outbreak.

Material and Methods

The study took place in a 2000 sow's farm. In December 2020, an important increase of abortions was detected, that culminated in an acute outbreak in January 2021 (from 1.5% to 7.6%). Diagnostics proved the presence of *Leptospira interrogans*, serovar Icterohaemorrhagiae (Microagglutination test, with values =>1/800 in blood samples of aborted sows). Antibiotic treatment was initiated with Oxytetracycline, and 3 weeks later, vaccination was implemented. All sows were vaccinated (February 2021) and revaccinated 4 weeks later with an octavalent Erysipelas, Parvovirus and Leptospira vaccine (Porcilis® Ery+Parvo+Lepto; MSD Animal Health). Subsequent re-vaccinations were done per group 10 days post-farrowing. Efficacy of vaccination was evaluated comparing monthly reproductive parameters before (11 months) and after the outbreak (11 months). The months when basic vaccination was stablished were excluded from the analysis. Data was statistically analyzed via ANOVA, ANCOVA and Mann Whitney test.

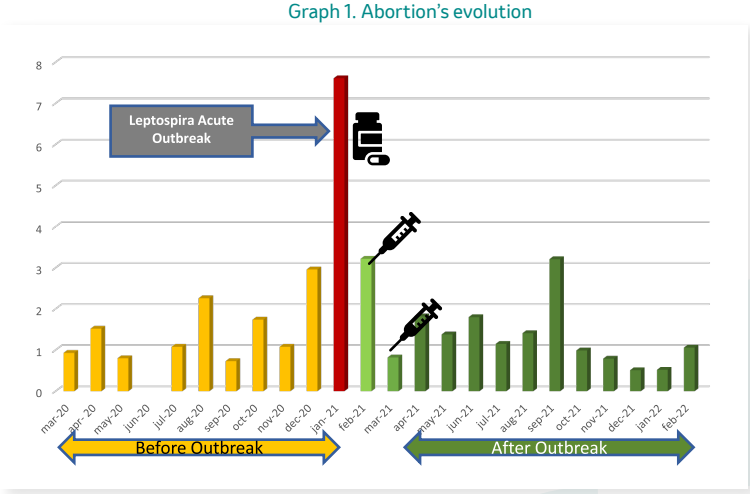
Results

Statistically differences were found in parameters such as total born piglets/sow/farrowing (Before: 14.18 vs After Vaccination: 14.67; p<0.004) and mummified/sow/farrowing (Before: 0.14 vs After: 0.7; p<0.01).
Numerical differences were described for farrowings/sow/year (2.25 vs 2.28), abortion % (2.1 vs 1.3), % returns to oestrus (10.0 vs 11.1) and farrowing rate (85.6 vs 84.6) in non-vaccinated (before) vs vaccinated (after) batches.
All results are summarized in Table 1. Abortions evolution before, during and after *Leptospira* outbreak are summarized in Graph 1.

Table 1. Reproductive performance before and after *Leptospira outbreak*

	Pre-vac	Post-vac	
Farrowing/sow/year	2.25	2.28	n.s.
Total Born (piglets/farrowing)	14.18	14.67	p<0.004
Born Alive (piglets/farrowing)	12.69	13.33	n.s.
Dead Born (piglets/farrowing)	1.49	1.33	n.s.
Mummified (piglets/farrowing)	0.14	0.07	p<0.01
Abortions (%)	2.07	1.33	n.s.
Return to Oestrus (%)	10.00	11.12	n.s.
Farrowing rate (%)	85.86	84.61	n.s.

Graph 1. Abortion's evolution



Conclusion

In this study, vaccination against *Leptospira* was an effective strategy to control the negative impact of the disease. The reproductive parameters were completely recovered, or even improved, being therefore, eliminated the typical recurrence of the infection that is commonly found following an acute outbreak.

Miscellaneous

Bergeyella zoohelcum on a Hungarian swine farm - Case study

Péter Máté[1] – István Makkai[1] - László Ózsvári[2] – László Búza[3]

*[1]MSD Animal Health, Hungary, *e-mail: peter.mate@merck.com. [2]University of Veterinary Medicine Budapest, Hungary. [3]Topigs Norsvin*

Introduction

A few decades ago, a special bacterial group got into the scientist's spotlight when they examined the upper respiratory tract's microbiome: the so called Weeksella group, or recently renamed as Bergeyella group. In this group, one of the most frequent species is *Bergeyella zoohelcum*. These bacteria are Gram negative, rod shaped, and immobile. They have anti-phagocytic factors, and an envelope as well. They are frequently found in infected bite wounds caused by dogs and/or cats. The lesions of pig lungs infected with this bacterium resembled an APP-, or Pasteurella-like macroscopic picture. This case report describes for the first time the isolation of *Bergeyella zoohelcum* in Hungarian pigs.

Material and Methods

Lungs (n=4) with necrotic and hemorrhagic pneumonia (diaphragmatic lobes), resembling macroscopically APP-, or Pasteurella-like lesions, were collected at the slaughterhouse (Fig.1). These fatteners were 6 months old and had been housed in two different fattening units but were originally coming from the same breeding source. Samples were kept at -10°C temperature. Bacterial culture was performed using blood-agar media and chocolate-agar supplemented with NAD and incubated for 48h under aerobic atmosphere. Antibiotic sensitivity was performed on these four isolates.

Results

The laboratory isolated *Bergeyella zoohelcum* together with *Pasteurella multocida* bacteria in all four lungs. Many colonies grew on the plate (Fig.2), but bacterial load was not quantified.

Discussion and conclusion

This was the first time that *Bergeyella zoohelcum* was found in swine samples in Hungary. The antibiotic sensitivity results for both *Bergeyella zoohelcum* and *Pasteurella multocida* were very similar, showing resistance to sulfamethoxazole and streptomycin. The scalding water from the abattoir did not pose a risk for lung contamination, as the bacterium is short-lived at 60C. Further research is needed to understand the role of this bacterium in respiratory disease in pigs, and its epidemiology.

Figure 1. Lung lesions observed at slaughter

Figure 2. Culture of Bergeyella zoohelcum

MSD Animal Health

Ascaris suum infection in gilts after introduction through a quarantine facility.

Authors: Guldberg, H[1] and Haugegaard, J[2]
1: Hyovet swine practice, Silkeborg, Denmark 2: MSD Animal Health, Nordics

Introduction

Ascaris suum (As) is present in almost all farms and can play a vital negative role in the development of immunity[1,2] and the general health of pigs in all ages. Especially newly introduced animals might pick up infection with As. The purpose of this study was to investigate the level of infection with As during the gilts quarantine period and after introduction into 10 large sow units.

Material and Methods

Blood was collected from 10 gilts in each of 10 farms. The same individual animal was sampled at three occasions: 1) introduction to the quarantine, aged 20-22 weeks of age, 2) release from the quarantine 6-8 weeks later, 3) 3-5 weeks after first insemination. Blood was analyzed for antibodies against As at University of Ghent using the SERASCA® test.

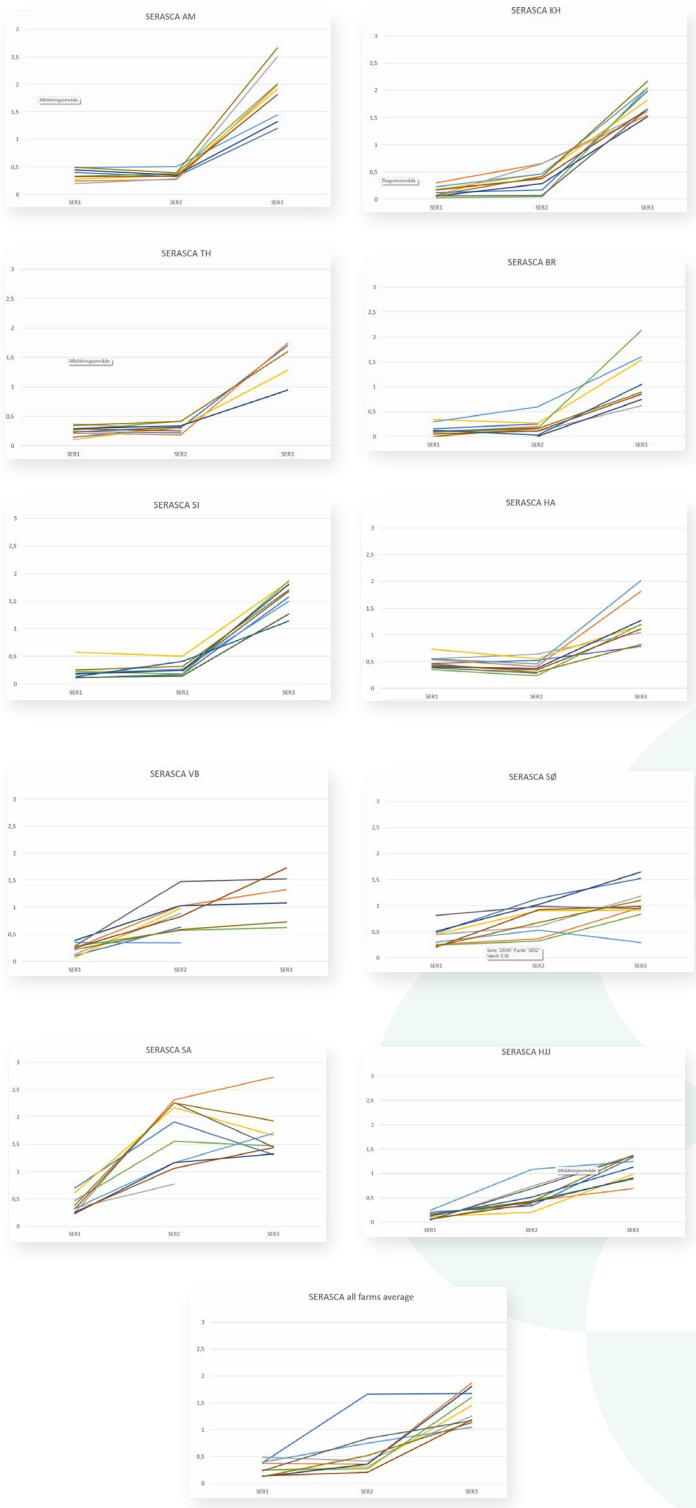
Results

At first sampling, all farms had an average titer below 0.5 (low/no infection). 10 pigs in 5 different farms had a titer above 0.5, but below 0.8 (moderate infection). At second sampling, 2 farms had a titer above 0.8 (high infection), additionally 2 farms had a titer above 0.5, and 6 farms remained below 0.5. At third sampling, all farms had an average titer above 1. In conclusion, 4 of the 10 farms had an ongoing As infection during the quarantine and in all farms, gilts were infected 3-5 weeks post insemination. Results are shown in figures. 6 figures on top show results from individual farms and pigs with no seroconversion in the quarantine, the 4 below show individual farms and pigs wirth a seroconversion in the quarantine. The average farm result is shown for all farms in the "SERASCA all farms average" sheet.

Conclusion

As was recognized as a problem and no deworming was applied in the farms. The investigation demonstrates that As can infect pigs already in the quarantine and that one should expect that all gilts are infected when introduced to the sow farm. One should consider investigating the status in specific farms in order to enhance introduction of healthy gilts. Enhanced cleaning procedures or medical deworming might be needed to secure health during gilt introduction to a farm.

SER1 = lifetime = 20-22 weeks, SER2 = lifetime = 28-32 weeks, SER3 = lifetime = 4-6 weeks post mating



MSD Animal Health

An intense deworming scheme with Fenbendazole as a tool to reduce liver condemnations in Finnish slaughterhouse – a case report

Sanna Nikunen[1], Juha-Pekka Jalli[2], Peter Astrup[1]
MSD Animal Health Nordic, Havneholmen 25, 1561 Copenhagen V, Denmark
Ravikuja 26, 30100 Forssa, Finland e-mail: sanna.nikunen@merck.com

Introduction

Ascaris suum is a parasite that infests pigs causing "white spot" lesions in the liver, leading to condemnation at the abattoir and having an economic impact. Finnish abattoirs subtract approximately 2.50 euros/condemned liver. The aim of this case-report was to evaluate the effect of different deworming strategies against *Ascaris suum* in fatteners.

Material and Methods

A farrow-to-finish 600-sow farm was selected. This herd had historic high liver condemnation rates, despite routine deworming against *Ascaris suum* of sows prior to farrowing and piglets around 7 weeks of age (recommended deworming scheme at *Guidelines for prevention of Ascaris suum in Finnish pig farms. Suolinkainen torjuntaohje 2014)*. Pigs entered the fattening unit at 30 kg and were slaughtered at 120-135 kg live weight. Liver condemnations were recorded batchwise from June 2017 until June 2019 (illustrated in figure 1). During this time, three deworming schemes were compared during consecutive periods: Historic period (recommended scheme only) from June 2017 to August 2018 (14 batches, n=13359 pigs); transition period (recommended scheme & Panacur AquaSol™, MSD Animal Health, ≤2 deworming treatments during fattening period) from September to October 2018 (3 batches, n=2830 pigs); and fenbendazole period (recommended scheme & 3 deworming treatments; namely every 5-6 weeks during fattening) from November 2018 to June 2019 (8 batches, n=6851 pigs). One-way ANOVA model was performed, considering batch as statistical unit.

Results

The liver condemnation rates were in average 73.5±6.3%, 66.9±6.9% and 20.8±8.3%, during the historic, transition and fenbendazole periods, respectively (p=0,00001) as illustrated in figure 2.

Figure 1. Percentage of Condemned livers per batch during Historic, Transition and Fenbendazole period.

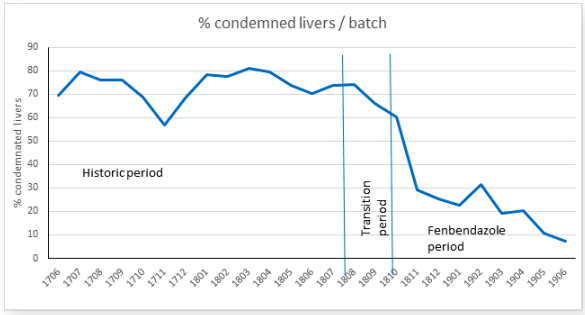
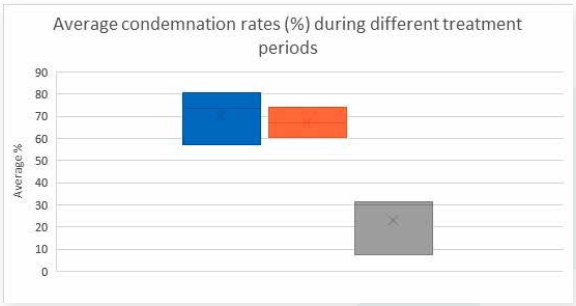


Figure 2. Average condemnation rates (%) during different treatment periods.



Blue: historic period; Orange: transition period; Grey: Fenbendazole period

Discussion and conclusion

As the cycle of *Ascaris suum* lasts 5 weeks, a more intense deworming was required to break the cycle in this farm with high liver condemnation rates. Implementation of intensive deworming scheme every 5-6 weeks with fenbendazole in oral suspension decreased liver condemnations significantly from 74% to 21%, leading to an increased revenue of 0.57 euro/pig and a positive return of investment.

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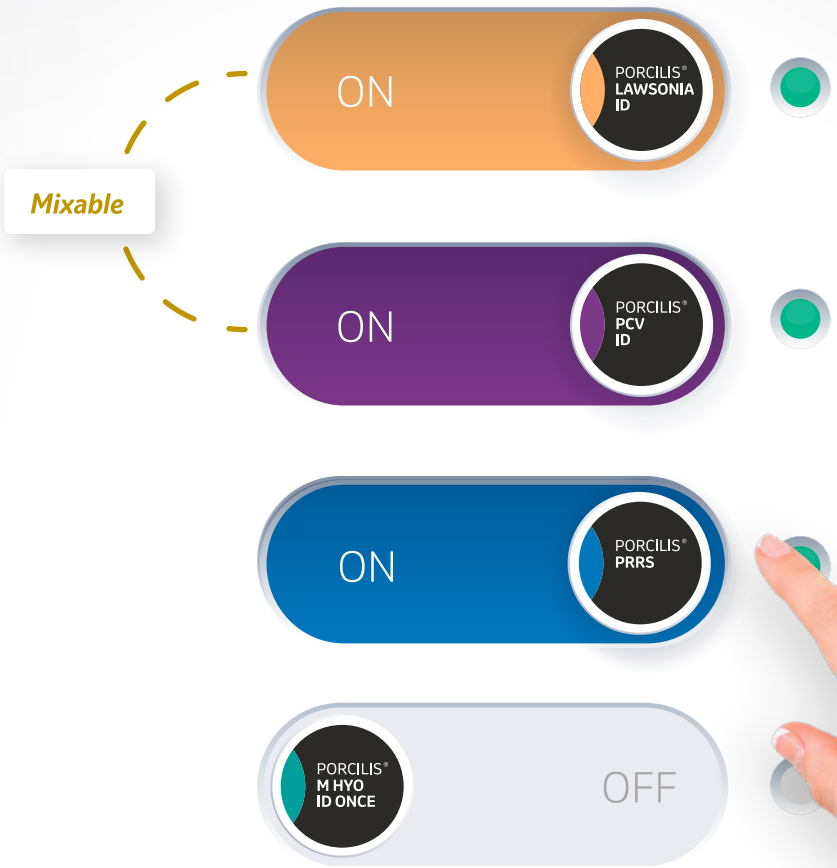

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