
TRANSFORM
YOUR INVISIBLE ENEMY
INTO VISIBLE GAIN
Porcilis®
ILEITIS
MSD
Animal Health

LAWSONIA INTRACELLULARIS:

"An invisible but present enemy in almost all pig farms."

Herd prevalence of *Lawsonia intracellularis* in:

N.AMERICA

CA.[1]	73%
US.[2]	76.6%
MX.[3]	37%*

LATAM

VE.[5]	35.2%
CO.[6]	45.6%
PE.[7]	38.7%
BR.[8]	34.7%
CL.[5]	39.3%
AR.[9]	31.2%

EUROPE[10]

GB.	100%
DK.	97%
NL.	93%
DE.	92%
FR.	79%
ES.	85%

**In 2019, 85% of the 27 Mexican farms sampled were positive for L. intracellularis.[4]*

Prevention is the key element to minimize loss caused by ileitis.

Factors shown to have a positive influence on disease prevention:[11]

- **Low lactation density**
- Slatted floor covering **more than 78% of the surface** in nursery units
- ZnO — Absence of **zinc dioxide**
- Maximum weaning weight **7.8 kg**

Important Factors in disease prevention:[11]

Weaning and subsequent accommodation of nursery pigs

Attempts to control L. intracellularis in pigs by minimizing the various associated risk factors on the farm are extremely complex.

An additional action to reduce L. intracellularis infection is to vaccinate pigs individually.

PORCILIS® ILEITIS:

Benefits of vaccination from field trials

In **field studies** with Porcilis® Ileitis statistically significant differences in diarrhea, intestinal lesions, bacterial excretion in feces, economic losses and production rates have been observed[12].

↑ ADG ↓ FCR

1 Impact in pig welfare

The first tool we have in our hands to improve animal welfare is vaccination, as a way to prevent animals from getting sick and thus reduce "unnecessary" suffering and pain.

Severe diarrhea[13] and mortality rates[12,14] in animals vaccinated with Porcilis® Ileitis.

	Severe diarrhea	Mortality	
Porcilis® Ileitis	0%	2.51%	0.55%
Control	40%	5.71%	1.66%

2 Changes in overall pig health

Vaccination against *Lawsonia intracellularis* improves microbiome[15] diversity and protects gut integrity[13].

Causes and rate of mortality in pigs during growth-finishing stages[12] (nº of animals)

Causes	Treatments	
	Vaccinated with Porcilis® Ileitis (No ATB)	Unvaccinated (No ATB)
Ileitis	**0**	8
Diarrhea	2	2
Sudden death	**1**	3
Encephalitis	1	1
Pneumonia	**6**	12
Sacrificed	5	4
Total	**15**	30
Ratio (%)	2.51a	5.71b

- ATB = Antibiotics

3 Influences in slaughter age and carcass quality

Age, slaughter weight and carcass weight[16]

	Age at slaughter (average)	Live weight (average)	Carcass weight (average)
Unvaccinated	164.7 d	121.1 Kg	84.9 Kg
Porcilis® Ileitis	161.0 d	124.3 Kg	90.1 Kg
Difference	-3.7 d	2.8 Kg	+5.2 kg/carcass

Slaughter age and casing yield[16]

	UNVACCINATED	PORCILIS® ILEITIS	DIFFERENCE
Age at slaughter (average)	164.7 d	161.0 d	-3.7 d
Meters used	17.6 m	18.1 m	+0.5 m

Days = d
Metres = m

Higher carcass weight and improved carcass quality

+

Higher yields of casing

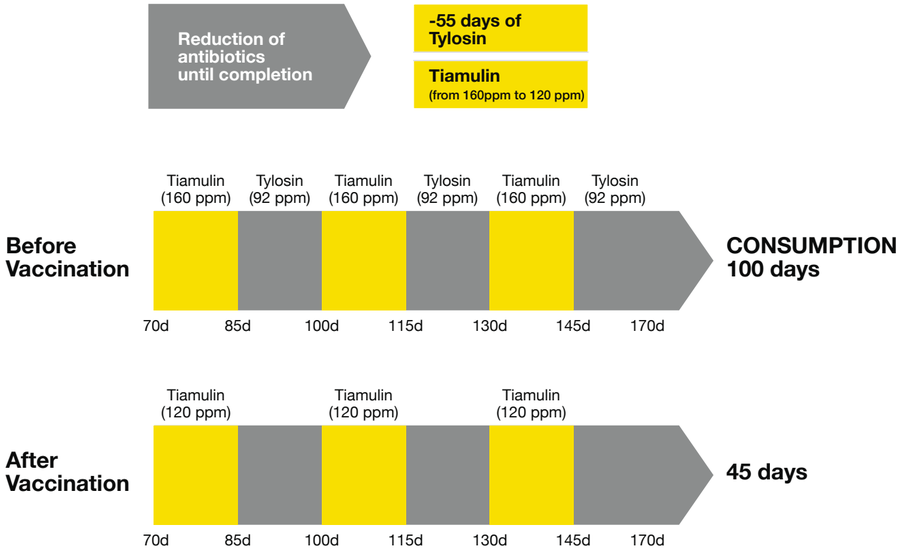
=

Increased profit for the producer

4 Variation in the use of antibiotics

The use of antibiotics (ATB) is necessary when there are acute clinical signs of ileitis to reduce its spread.

Reduction in the use of antibiotics in pigs vaccinated with Porcilis® Ileitis in Brazil[17].



Reduction of costs

+

Reduced loss of production

=

Individual vaccination is the alternative to the prophylactic use of ATB

FIELD TRIALS:

Porcilis® Ileitis suggested impact

In recent field trials,Porcilis® Ileitis positively impacted herd profit giving a significant return on investment.

In the different field trials carried out in Latin America, pigs vaccinated with Porcilis® Ileitis demonstrated the following significant results compared to unvaccinated pigs.

- **Increased weight gain (faster growth).**
- Better feed conversion (less feed needed)
- Lower mortality (more animals sold)
- Reduced use of antibiotics (lower cost and more sustainable)
- Higher live weight of animals at slaughter (more kg of meat)

- ATB = Antibiotics

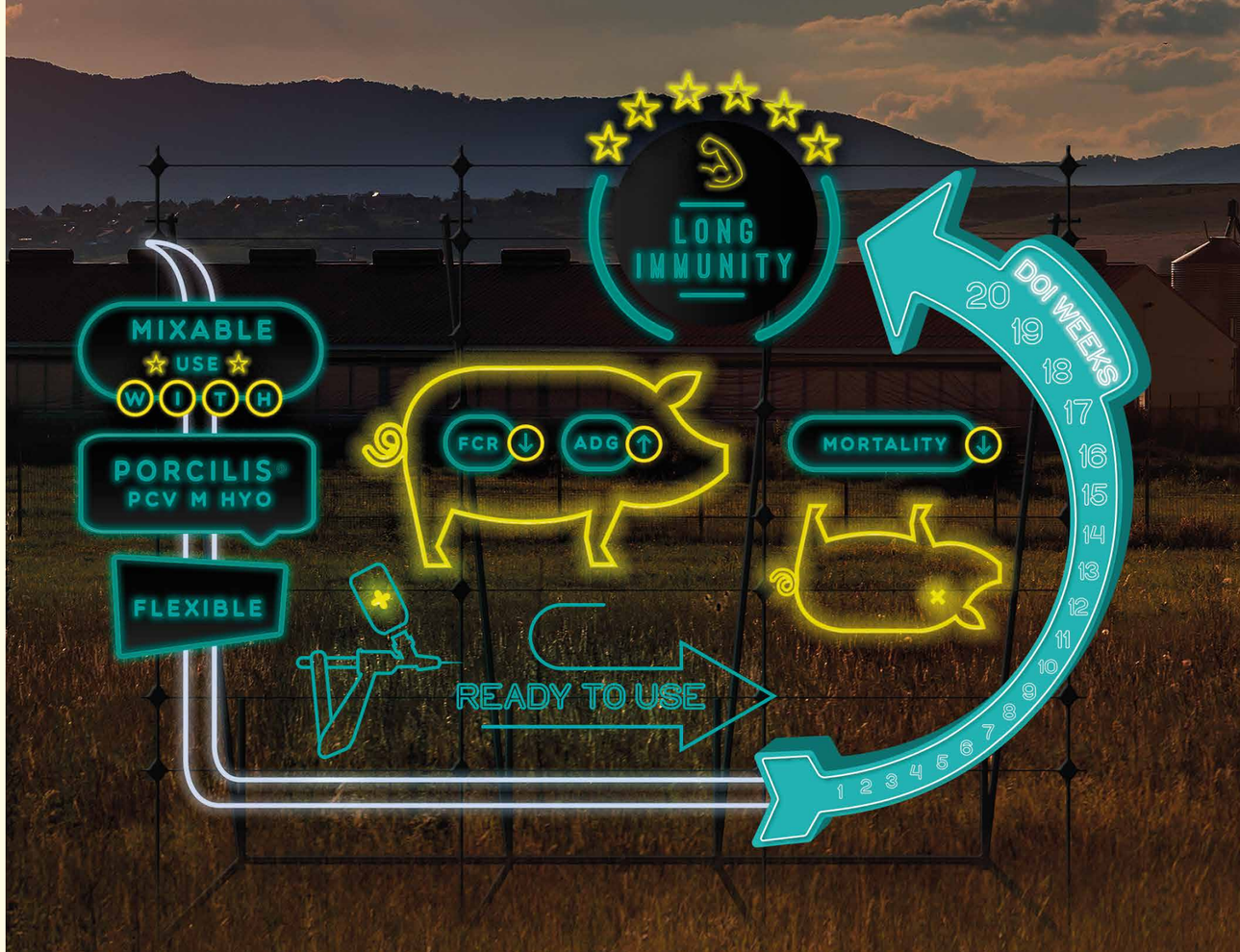
-Internal data from field trials. Shared during the MSD Animal Health organized congress IntestiPig Forum LATAM 2021

Country	Nº piglets	Comparison	Benefits
Brasil	1,080	Vaccinated (Porcilis Ileitis) vs unvaccinated	Slaughter weight: +2.35 kg/pig Total gain: +US$ 3.28/pig
	3,027	Vaccinated (Porcilis Ileitis), with or without ATB vs unvaccinated, with or without ATB	Lower % mortality, higher % lean carcass. Final profit per animal: +6.2% (Vac. vs control) +4.4% (Vac.+ATB vs ATB)
	55,652	Vaccinated (Porcilis Ileitis) + ATB, vs unvaccinated + ATB	**Average weight gain: + 31 g/day** Use of ATB in feed: -25% (ppm) Market weight: + 3.1 kg/pig
	24,000	Vaccinated (Porcilis Ileitis) vs unvaccinated	**Average weight gain: +26 g/day** ROI: R$ 7,130.62
Chile	33,118	Vaccinated (Porcilis Ileitis) vs unvaccinated	Feed consumption: -7 kg/pig Use ATB: -39% Total cost: - US$ 4/pig
Perú	8,183	Vaccinated (Porcilis Ileitis) + ATB, vs unvaccinated + ATB	Age to market: -0.6 days Market weight: +1.75 kg/pig

Decreased feed conversion rate (FCR): **7%**, Reduction of mortality: **20% to 40%**, Carcass improvement: **reduction of backfat**

Porcilis® ILEITIS

TRANSFORM YOUR INVISIBLE ENEMY
INTO VISIBLE GAIN



These productivity improvements have been obtained in different field trials with Porcilis Ileitis

ECONOMIC IMPACT:

From Dr. Derald Holtkamp's presentation at the MSD AH CERG virtual congress. 2021. Publication pending in AASV 2022.

Under current market conditions (high pork and feed prices), the economic impact of uncontrolled ileitis is high and, therefore, the ROI for prevention is also high.

Prevention is especially critical in the case of ileitis, as this disease negatively impacts feed conversion (FCR), weight gain (ADG) and mortality.

January 2021

Total economic impact of ileitis

$ 14.53 / pig

June 2021

Total economic impact of ileitis

$ 25.70 / pig

Porcilis® ILEITIS

Loss of productivity caused by Ileitis

- Average daily gain **(-11%)**
- Feed conversion rate **(+7%)**
- Mortality **(+24%)**

Current market conditions

- High prices for pork sales
- High food prices

The economic impact of ileitis is high

- Average daily gain **(-$ 15.78)**
- Feed conversion rate **(-$ 7.43)**
- Mortality **(-$ 2.50)**

Porcilis® Ileitis suggested impact

Hypothetical example
(cost of intervention* $ 2.35)

Spending $ 2.35 to reduce 50% of losses (0.5 * $ 25.70) = **$ 12.85** **(Cost benefit from productivity improvements)**

Cost-benefit ratio = Cost / Benefit = $ 12.85 / $ 2.35 = **1: 5.5**

ROI = (Benefit - Cost) / Cost = ($ 12.85 - $ 2.35) / $ 2.35 * 100 = **445%**

** Includes vaccination with Porcilis® Ileitis*

Porcilis® ILEITIS

Potential productivity improvements suggested by different field trials with Porcilis® Ileitis

Consistent immunity

A dose of Porcilis® Ileitis confers protection at the intestinal mucosa level.

Reduction of antibiotic use

Effective prevention leads to a reduction in the use of antibiotics as a treatment measure.

Increased profitability

Reduction of clinical signs and productivity losses.

Reduction of contagion

The use of Porcilis® Ileitis causes a reduction in the excretion of the bacteria.

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[2]Bronsvoort M, Norby B, Bane DP et al. Management factors associated with seropositivity to Lawsonia intracellularis in US swine herds. J Swine Health Prod. 2001
[3]Socci Escatela G. et al. PCR Determination of Lawsonia intracellularis-infected herds in Mexico. Téc Pecu Méx 2005;43(2):211-218
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[11]Peer reviewed published data. Arnold M et al. Correlation of Lawsonia intracellularis positivity in quantitative PCR and herd factors in European pig herds. Porcine Health Management. 2021
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[13] Peer reviewed. Roerink F. et al. A novel inactivated vaccine against Lawsonia intracellularis induces rapid induction of humoral immunity, reduction of bacterial shedding and provides robust gut barrier function. Vaccine 36. 2018.
[14]Vitorino C. et al. Avaliação da Porcilis Ileitis na região de Pará de Minas. Brasil. Internal data from Field Trials.
[15]Leite F. et al. 2018. Leite F. et al. Vaccination Against Lawsonia intracellularis decreases shedding of Salmonella enterica serovar Typhimurium in co-infected pigs and alters the gut microbiome. Scientific Reports. Nature. 2018
[16]Lima M. Porcilis® Ileitis evaluation. Preliminary results from ther farm and the slaughterhouse. Brasil. 2021. ESPHM 2022.
[17]Risso A.R. Increased average daily gain of pigs vaccinated with Porcilis® Ileitis for the control of Lawsonia intracellularis. Poster.IPVS. 2020.

International summary of product information

BACTERINA PARA EL CONTROL DE LA ILEITIS CAUSADA POR *Lawsonia intracellularis* EN CERDOS

Indicaciones:
Porcilis® ILEITIS está indicada para utilizarse en cerdos sanos de 3 meses de edad o mayores como auxiliar en controlar la ileítis causada por *Lawsonia intracellularis*, para reducir la colonización de Lawsonia, así como para disminuir la duración de la excreción fecal. Se ha demostrado que la duración de la inmunidad supera las 20 semanas.

Dosis y vía de administración:
La vacuna se administra a cerdos de 3 semanas de edad o mayores mediante una inyección intramuscular con una dosis de 2 ml.

Advertencias para uso en animales:
Vacune únicamente a animales sanos.
La seguridad de este producto no ha sido establecida durante la gestación o la lactancia.

Fórmula: Cada dosis de 2ml contiene:
Cultivos inactivados de *Lawsonia Intracellularis*,

SPAH08	1.2RP*
Vehículos c.b.p	2ml

*Potencia Relativa

MSD Animal Health