Comparison of Intestinal Lesions Between Enterisol® Ileitis and Porcilis® Ileitis Using a *Lawsonia intracellularis* Mucosal Homogenate Seeder Pig Challenge Model

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INTRODUCTION

Lawsonia intracellularis affects millions of growing pigs yearly with clinical and subclinical ileitis.[1] Enterisol® Ileitis is an orally modified live vaccine that provides protection against ileitis. Recently an injectable killed vaccine, Porcilis® Ileitis has been made available to the US market. The objective of this study was to evaluate the efficacy of Enterisol® Ileitis and Porcilis® Ileitis in growing pigs via comparison of ileocecal lesions.

MATERIALS AND METHODS

Three week old weaned pigs were placed in a Pipestone Applied Research wean to finish barn. Three treatment groups (non-vaccinated controls (NVC), Enterisol® Ileitis and Porcilis® Ileitis) were randomly assigned within block to construct a randomized block design. Additionally, three non-vaccinated, non-treatment group pigs were added to each pen to serve as seeder pigs. Porcilis® Ileitis pigs were vaccinated at three weeks of age with 2 ml IM. According to the standard farm protocol Enterisol® Ileitis pigs were vaccinated orally a Stenner pump five weeks post-weaning. Seeder pigs in each pen were orally challenged with 40 mL Lawsonia intracellularis (~log 10 x 8) at nine weeks post weaning. Four weeks post-challenge thirty indirectly challenged pigs from each treatment group showing clinical signs of ileitis were euthanized, necropsied and lesions grossly scored. Immunohistochemistry and Hematoxylin & Eosin staining of ileum and cecum were analyzed.

RESULTS

Results for microscopic lesions are summarized in table 1. Enterisol® Ileitis had significantly less IHC positives (6.67 %) in ileum sections compared to the NVC (63.33 %) and the Porcilis® Ileitis (43.33 %) treated pigs. Both Enterisol® Ileitis and Porcilis® Ileitis treatments had significantly less percentage of pigs affected on ileum H & E sections than the NVC. However, the Enterisol® Ileitis group had numerically less pigs affected on ileum H&E than Porcilis® Ileitis. Cecal microscopic lesions were evident in NVC and Porcilis® Ileitis. The Enterisol® Ileitis had lower numbers of Lawsonia PCR positives and lower levels from cecal content compared to Porcilis® Ileitis and NVC at necropsy (table 2).

DISCUSSION AND CONCLUSION

Previous work has shown a strong correlation between increased prevalence and severity of ileocecal lesions and a decrease in pig performance. In this challenge model, pigs that were vaccinated with Enterisol® Ileitis then indirectly challenged showed significantly lower IHC scores when compared to both NVC and Porcilis® Ileitis.

Table 1: Summary of affected pigs for microscopic lesions

	Enterisol® Ileitis	Porcilis® Ileitis	NVC	P-value[1]
Ileum IHC (%)	6.67[a]	43.33[b]	63.33[b]	< 0.0001
Cecum IHC (%)	0.00	3.33	13.33	0.0637
Ileum H&E (%)	20.00[a]	43.33[a]	66.67[b]	0.0013
Cecum H&E (%)	0.00[a]	30.00[b]	10.00[ab]	0.0023

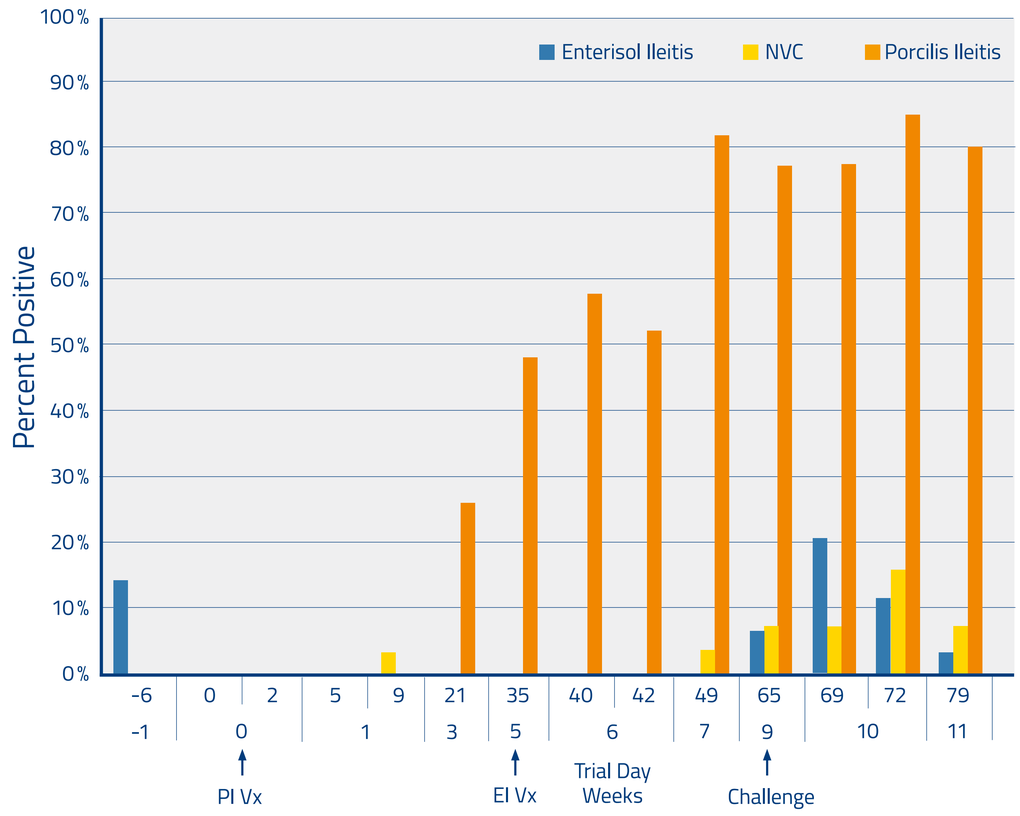
[1] *Analyzed using Pearson's Chi-square*

[ab] *Means differ <0.05 Fisher's Exact Test*

Table 2: Summary of Lawsonia PCR+ for necropsy pigs by treatment group.

Treatment group	Frequency	CT Median	CT Min	CT Max
Enterisol® Ileitis	5/30 (16.67 %)	36.75	33.12	36.91
Porcilis® Ileitis	9/30 (30.00 %)	35	29.22	37.38
NVC	22/30 (73.33 %)	33.25	26.47	37.69

Figure 1: *Lawsonia intracellularis* ELISA percent positives



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