

The first swine vaccine to show protection against Ileitis, Salmonellosis¹ and Colibacillosis².

INTRODUCTION

Gram-negative bacteria have been implicated in the pathogenesis of Salmonellosis, Colibacillosis and Ileitis³. Historically, dairy and beef cattle were protected from various gram-negative diseases via core-antigen antibodies. Therefore, viable possibilities may exist to immunologically protect swine from multiple gram-negative diseases with a core-antigen vaccine.

Endotoxemia may be caused by one or more of the large gram-negative family Enterobacteriaceae. Unfortunately, hundreds of serotypes make it impractical to combine sufficient autogenous vaccines for broad-spectrum protection. Thus, there is a need for a single source bacterin providing protection against virtually all gram-negative bacterial swine diseases.

Past research demonstrated ENDOVAC-Porci®, a core antigen and immune stimulant vaccine, provides piglets protection against the enteric and respiratory effects of gram-negative endotoxins². The objective of this study was to expand the list of gram-negatives by showing protection against a Lawsonia intracellularis challenge and demonstrate ENDOVAC-Porci vaccine performance as compared to a commercial ileitis vaccine.

MATERIALS AND METHODS

Study Location

Midwest Veterinary Services, Inc., Oakland, NE
Investigator: Charley Cull, DVM, PhD

Study Design

Single-site, randomized, prospective, blinded, comparative placebo-controlled.

Animals

90 commercially sourced, healthy piglets, > 2.8 lbs.

Vaccination

Group 1 & 2 piglets were vaccinated IM with 1ml of either a saline placebo (group 1), or ENDOVAC-Porci from ENDOVAC Animal Health (group 2) at day 1 of age (study day 0) and boosted at weaning at 21 days of age (study day 21). The group 3 piglets were vaccinated at weaning (study day 21); IM with a 2ml dose of Porcilis® Ileitis from Merck Animal Health. The following vaccines were also given at study day 21: mlv PRRS, PCV2, and Mycoplasma hyopneumoniae.

Challenge

All pigs were orally challenged on study day 42, with gram-negative organism, Lawsonia intracellularis⁴.

Statistical Methods

Experimental Unit: Individual

Number of Replicates: 30 per treatment group.

Statistical analysis performed by the Center of Outcomes Research and Epidemiology at Kansas State University.

REFERENCES

1. Sprouse RF, Garner HE: Data on file at the University of Missouri-Columbia and USDA, Hyattsville, Maryland
2. Cull C. The effects of Core Antigen Bacterin with an Immunostimulant on Piglet Health and Performance Outcomes when Challenged with Enteric and Respiratory Pathogens. In: Proceedings of the 53rd AASV Annual Meeting; 2022:167-169
3. Swine Disease Manual; Fifth Edition; E.J. Neumann, A. Ramirez, and K.J. Schwartz
4. Isolate sourced from: Swine Services Unlimited, Inc., Rice MN

Results

Body Weights

Day 0 by Treatment Group

Treatment	Mean kg	Mean lb
Saline	1.67	3.68
ENDOVAC-Porci	1.60	3.53
Porcilis Ileitis	1.65	3.64

Effect of treatment (P = 0.48)

Day 42 by Treatment Group

Treatment	Mean kg	Mean lb
Saline	16.76	36.95
ENDOVAC-Porci	16.73	36.88
Porcilis Ileitis	17.05	37.59

Effect of treatment (P = 0.91)

Day 70 by Treatment Group

Treatment	Mean kg	Mean lb
Saline	28.93	63.78
ENDOVAC-Porci	32.43	71.50
Porcilis Ileitis	33.85	74.63

(Saline vs Endovac-Porci: P = 0.059; Saline vs Porcilis Ileitis: P = 0.046, Endovac-Porci vs. Porcilis Ileitis: P > 0.05)

Weight Gain

Day 42-70 by Treatment Group

Treatment	Mean kg	Mean lb
Saline	12.17	26.83
ENDOVAC-Porci	15.70	34.60
Porcilis Ileitis	16.80	37.04

(Saline vs Endovac-Porci: P = 0.056; Saline vs Porcilis Ileitis: P = 0.047, Endovac-Porci vs. Porcilis Ileitis: P > 0.05)

Morbidity

Clinical Scores: % pigs > clinical score of 0:

- body condition, respiration & behavior
- 0 Normal, 1 Mild, 2 Moderate, 3 Severe

Fecal Scores: % pigs > fecal score of 0:

- 0 Normal, 1 Soft, 2 Loose, 3 Watery

Clinical & Fecal Scores:

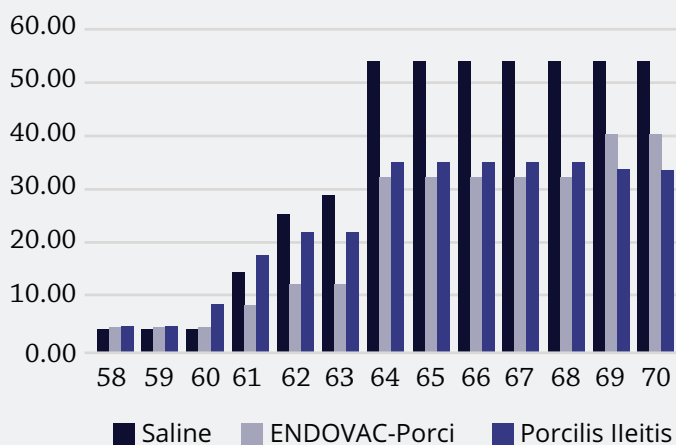
Day 58-70

Scoring	Saline	ENDOVAC-Porci	Porcilis Ileitis
Clinical	24.7 ^a	14.6 ^b	15.9 ^{ab}
Fecal	27.4 ^a	17.1 ^b	20.9 ^{ab}

Treatment means with different superscripts differ from each other (P < 0.05)

Fecal Scores

Percent Morbidity: Days 58-70



SUMMARY OF RESULTS

ENDOVAC-Porci vaccinated pigs outperformed the control pigs and went head-to-head with Porcilis Ileitis. Compelling data to consider vaccination with ENDOVAC-Porci to control ileitis:

- 29.0% (7.7 lb) higher weight gain over controls
- No statistical difference in weight gain compared to Porcilis Ileitis
- 40.9% better clinical scores than controls
- 8.2% better clinical scores than Porcilis Ileitis
- 37.6% better fecal scores than controls
- 18.2% better fecal scores than Porcilis Ileitis

