

# EFFICACY AND SAFETY OF SUISENG® TO PREVENT NEONATAL DIARRHEA AGAINST MIXED INFECTIONS WITH ENTEROTOXIGENIC *E. COLI* AND PRRSV

Kitchodok<sup>1\*</sup>, R.; Ananratanakul<sup>1</sup>, C.; Kongthong<sup>1</sup>, T.

<sup>1</sup>Animal Health (Thailand) Company Limited

\*Corresponding author (ruangurai.kitchodok@hipra.com)



## INTRODUCTION

Enterotoxigenic *E. coli* (ETEC) is an important pathogen causing diarrhea and death in neonatal piglets, which has been noted in most swine-producing regions of the world.<sup>1</sup> This microorganism can increase negative economic growth, which is estimated to be worth over €130 per sow per year.<sup>2</sup> There is an undeniable concern about the increasing phenomenon of antibiotic resistance rates of *E. coli*. Several countries have the goal of reducing antibiotic use by tightening reporting requirements. This is one of the major reasons that has tended to increase both bacterial load in piggeries and fluctuated herd health status.<sup>3</sup>

The aim of this study was to emphasize a comparison between clinical effects and interpret a ROI of SUISENG® to treat neonatal diarrhea against a mixed infections with porcine reproductive and respiratory syndrome virus (PRRSV) in swine herds.

## MATERIALS AND METHODS

A 400-sow farrow-to-finish breeding and production herd, located Nakhon Pathom Province, Thailand, was selected in 2017 as representative of particular colibacillosis- and PRRS-related problems in up to 15% and 65% of the litters affected (Fig. 1). Losses of this situation appeared to be more severe whenever the herd was subjected to isolate *E. coli* in contaminated water abruptly 200 coliforms per ml. Twenty-four fourth parity sows were randomly allocated into two groups. Group 1 (n=12) was intramuscularly vaccinated with 2 ml of SUISENG® at 6 and 3 weeks before farrowing. Group 2 (n=12) received two 2-ml doses of NSS (Normal Saline Solution) as control. Safety was monitored daily until two days after vaccination. Estimated average cost of piglet production and vaccination were collected during this study period to calculate ROI. SUISENG® efficacy in piglets was determined by comparing the data between groups using a statistical program (SAS 9.0).

## RESULTS

No adverse reactions and no negative effects on clinical signs were observed in any of the vaccinated sows (Table 1). Table 2 shows a significant performance improvement, with a reduction of *E. coli* infection-related mortality of up to 2.52%. Weaned pigs from vaccinated sows tended to have a higher weight gain and an average daily gain (ADG) of up to 650 g and 30.96 g per day, respectively. Vaccination with SUISENG® improved the herds' performance and results in ROI in 294.4%.

**Table 1.** Analysis of SUISENG® safety after vaccination.

Clinical features	SUISENG®	Control
Numbers of sows (n)	12	12
Local reactions (%)	0	0
Pyrexia (%)	0	0
Abdominal breathing (%)	0	0
Vomiting (%)	0	0
Mortality rate (%)	0	0
Average feed intake during the clinical observation (kg)	2.16±0.24 <sup>a</sup>	2.13±0.26 <sup>a</sup>

**Note:** \*Different letters (a, b) within the same column represented significant differences ( $P < 0.05$ ).

**Table 2.** Comparison of piglet production performance between sows vaccinated with SUISENG® and the control group.

Production parameters	SUISENG®	Control
Average pig born alive/litter	11.25 <sup>a</sup>	9.92 <sup>a</sup>
Average pigs weaned/litter	9.50 <sup>a</sup>	8.83 <sup>a</sup>
Average piglets birth weight (kg)	1.40 <sup>a</sup>	1.38 <sup>a</sup>
Average weight gain at 21d (kg)*	4.50 <sup>a</sup>	3.85 <sup>a</sup>
Average ADG (g per day)	214.29 <sup>a</sup>	183.33 <sup>b</sup>
Mortality linked to <i>E. coli</i> infection at <11d (%)**	0	2.52
Increased weaning weight (kg/pig)	0.822	
<b>ROI (%)***</b>	<b>294.4</b>	

**Note:** \*Pig weaned at 21 days of age. \*\*All piglets were medicated each day at 11 days old. \*\*\*Cost of vaccination and estimated average cost of piglet production should be recorded to access ROI. \*\*\*a, b Consecutive values for a parameter with different superscripts differ significantly ( $P < 0.05$ ).

## DISCUSSION AND CONCLUSIONS

It is accepted that SUISENG® appears to be a safe vaccine and provides protection against *E. coli* infection during the lactating phase with 294.4% ROI in this field conditions (with *E. coli* and PRRSV). Our findings indicated that not only *E. coli* was one of the key issues of concern for this farm, but PRRSV infection and fluctuated thermal environment also increased pig mortality. Besides, stressors should be reduced by maximizing the herd's health immunity and strict biosecurity. Consequently, effective vaccination and farm management are guaranteed to control neonatal diarrhea in piglets before it emerges.

## ACKNOWLEDGMENT

The authors would like to acknowledge the swine farm at Nakhon Pathom Province, Thailand, and would like to thank them for providing samples and encouragement.

## REFERENCES

- 1 Moon and Bunn. 1993. Vaccine. 11: 213–220.
- 2 Sjölund et al. 2014. 6th ESPHM, Sorrento, Italy. 189.
- 3 Walsh and Wu. 2016. Lancet Infect Dis. 16: 1102–1103.