Observations of a licensed trivalent PRDC vaccine for PCV2, M. hyo and PRRS

B. Payne[1], J. Kolb[3], R. Edler[2], H. Oswald[1]

[1]Boehringer Ingelheim Vetmedica, Inc., St. Joseph, Missouri; [2]Health Management Center, Boehringer Ingelheim Vetmedica, Inc., Ames, Iowa; [3]Boehringer Ingelheim International Trading CO, Ltd., Shanghai

INTRODUCTION

Porcine Respiratory Disease Complex (PRDC) is a multi-pathogen disease that can cost owners > $ 10 / pig[1]. Protection against clinical disease associated with these pathogens is one control method. A trivalent porcine circovirus type 2 (PCV2), *Mycoplasma hyopneumoniae* (M. hyo) and Porcine Reproductive and Respiratory Syndrome (PRRS) vaccine, 3FLEX® (Boehringer Ingelheim Vetmedica, Inc.), has been available in the U.S. marketplace since 2010 and used to vaccinate hundreds of thousands of pigs. The purpose of this field study was to evaluate pigs vaccinated with 3FLEX® compared to a non-vaccinated group following challenge with PCV2 and PRRS.

MATERIALS AND METHODS

Study pigs (n = 675) were weaned from two typical commercial sow units that were demonstrated PRRS stable (herd category II-A)[2] on PRRS PCR (HMC, Ames, IA) testing of weaned pigs. To prevent shedding of vaccine from the vaccinated group to the control group, pigs receiving 3FLEX® (2 ml, n = 387) were housed approximately 1.0 km north/downwind from non-vaccinated control (NVC) group (n = 288) for 48 days. No PRRS virus (PRRS PCR, HMC, Ames, IA) was detected in NVC pigs 12 hours prior to transport to the challenge site. Following the vaccination period, pigs were transported by treatment group, and assigned to pens based on pig size (small, medium, large) and balanced by treatment. One pen per barn held pigs from NVC and 3FLEX® groups to be challenged with a proven oral PRRS (type 2, 4000 $TCID_{50}$) and PCV2 (8 logs) positive tissue homogenate (5 gallon feed, top-dressed with 500 mL of tissue homogenate / pen) one week post-placement. An additional intramuscular challenge with PRRS virus (2 mL, 2 logs) was made 10 days following the oral exposure. A subset of pigs were euthanized and necropsied to confirm a valid challenge by observing lesion development at five weeks post challenge.

RESULTS AND DISCUSSION

Table 1: Differences in performance variables in 3FLEX® vaccinated pigs versus Non-vaccinated control (NVC) pigs

Performance Variable	3FLEX®	Non-Vaccinated Control (NVC)	P-value
Initial BW (kg)	27.94	27.99	0.81
Final BW (kg)	118.93	112.67	< 0.0001
ADG (g)	875	817	< 0.0001
Mortality (%)	5.1	28.2	< 0.0001
Culls (%)	11.8	27.5	< 0.0001

BW = Body Weight; ADG = Average Daily Gain

The results of this trial suggest that 3FLEX® provides protection to pigs challenged with PRRS and PCV2 as compared unvaccinated cohorts. To the authors' knowledge, this is the first large scale field study to successfully demonstrate individual pig PRRS and PCV2 challenge following 3FLEX® vaccination. In the face of a PRRS and PCV2 challenge, use of a trivalent vaccine mixture is an option for managing the economic losses associated with PRDC and the single injection reduces time and labor required for vaccination against these costly diseases.

REFERENCES

1. Haden et al., *Assessing production parameters and economic impact of swine influenza, PRRS and Mycoplasma hyopneumoniae on finishing pigs in a large production system. AASV. 2012;75-6.*
2. Holtkamp et al., *Standard herd classification system for describing the PRRSV status of herds. Leman.2010; 44-6.*