

## SUVAXYN® PCV2 ONE DOSE PROVIDES PROTECTION IN THE PRESENCE OF MATERNAL ANTIBODIES

Fort Dodge Animal Health's Single-Dose Porcine Circovirus Vaccine Type 1-Type 2 Chimera (Killed Virus)

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DECEMBER 2007

### KEY POINTS

- The influence of passively acquired antibodies (maternal antibodies) can affect the efficacy of any vaccination program. Vaccination timing in relation to maternal antibodies and timing of pathogen exposure helps determine the success of preventing losses due to clinical signs of disease.
- Suvaxyn PCV2 One Dose, a single-dose porcine circovirus type 1-type 2 chimera (killed virus) vaccine from Fort Dodge Animal Health effectively induced an active immune response, even when administered to pigs 26 to 28 days of age with moderate to high levels of passively acquired antibodies at vaccination.

### OVERVIEW

Porcine circovirus type 2-associated disease (PCVAD) has been shown to produce severe economic losses in some swine herds. Vaccines have proven effective when administered to pigs with no or low levels of passively acquired maternal antibodies against PCV2. However, since PCV2 is ubiquitous, most sows and gilts have been exposed to PCV2. Their piglets have varying levels of passively acquired antibodies, which could influence the ability of pigs with maternal antibodies to develop active, protective immunity following vaccination.

### EXPERIMENTAL DESIGN AND PROTOCOL

Thirty healthy pigs were assigned to one of three groups based on serological results for PCV2 antibody titer (ELISA sample-to-positive [S/P ratio]). They were vaccinated intramuscularly (IM) with Suvaxyn PCV2 One Dose on Day 0. Another 30 pigs with varying antibody levels were used as non-vaccinated controls.

TREATMENT USING SUVAXYN PCV2 ONE DOSE			
GROUP	ANTIBODY TITER	TREATMENT	NO. PIGS
1	Negative/low (S/P ratio<0.3)	Suvaxyn PCV2 One Dose (2 mL, IM)	9
2	Low/moderate (0.4>S/P ratio<0.6)	Suvaxyn PCV2 One Dose (2 mL, IM)	9
3	High (0.7>S/P ratio<1.0)	Suvaxyn PCV2 One Dose (2 mL, IM)	12
4	Variable levels	Unvaccinated controls	30

Four weeks (28 days) post-vaccination, all pigs were challenged with a wild-type pathogenic PCV2.

Blood samples were collected weekly to determine presence of PCV2-specific antibodies by ELISA and the presence of PCV2-specific nucleic acids by quantitative real-time PCR. All pigs were necropsied on Day 48 post-vaccination (21 days post-challenge).

### RESULTS AND DISCUSSION

A significant number of vaccinated pigs seroconverted prior to challenge. By Day 28 (challenge), a significant number of pigs in Groups 1, 2 and 3 were seropositive for PCV2-specific antibodies, including:

- 6/9 pigs in Group 1 (negative/low maternal antibody titers),
- 6/9 pigs in Group 2 (low/moderate antibody levels), and
- 11/12 pigs in Group 3 (high maternal antibody levels).

PCV2 antibody levels in all non-vaccinated pigs steadily declined from Day 0 to Day 28 (challenge). At challenge, 15/30 non-vaccinated pigs were seronegative for PCV2. The remaining 15/30 non-vaccinated pigs had varying levels of PCV2 antibodies, with ELISA S/P ratios ranging from 0.3 to 1.0.

Regardless of maternal antibody status at vaccination, real-time PCR analysis showed vaccinated pigs had significantly ( $p<0.05$ ) lower levels of PCV2 DNA and lower incidence of PCV2 viremia at 7, 14 and 21 days post-challenge compared to non-vaccinated pigs. No statistical difference in PCV2 DNA load was found among vaccinated groups, despite variability in passively acquired antibody levels at vaccination.

Compared to non-vaccinated pigs, pigs vaccinated with Suvaxyn PCV2 One Dose also had significantly ( $p<0.001$ ) lower amounts of PCV2 antigen in lymphoid tissues as determined by immunohistochemistry (IHC) staining of lymph nodes, spleen and tonsil. The amount of PCV2 antigen present in lymphoid tissues was not different ( $p>0.4$ ) among vaccinated pigs, regardless of antibody status at vaccination.

### CONCLUSION

Study findings suggest Suvaxyn PCV2 One Dose is effective in stimulating active immunity in young pigs, even when administered to pigs with moderate to high levels of passively acquired antibodies at vaccination. These findings suggest practitioners can recommend Suvaxyn PCV2 One Dose use at about 4 weeks of age, well ahead of typical exposure to the pathogen.