

Serological Profile of PCV-2 viremia and IgG levels in an unvaccinated herd

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Introduction

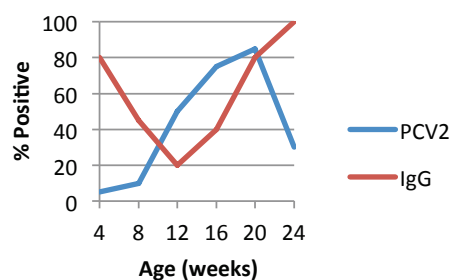
Very few swine herds remain unvaccinated for PCV-2. The Prairie Swine Centre (PSC) is a 300 sow high health farrow-to-finish commercial swine unit located 5 miles south-east of Saskatoon, Saskatchewan, Canada. It is a production research institute affiliated with the University of Saskatchewan and has a significant applied research role for producers in western Canada. The farm has never used sow or piglet vaccination to control PCVAD. The herd is PCV-2 positive and naive to the influence of vaccine in regards to serological profiling and clinical presentation of disease. In this study, PCV-2 viremia and IgG serological profiles were determined prior to further investigations of PCV-2 epidemiology in a naive herd.

Materials and Methods

Blood samples were collected from groups of 20 pigs at 4, 8, 12, 16, 20, and 24 weeks of age. All the pigs were bled the same day. To generate a quantitative PCV-2 viremia profile samples were submitted to Prairie Diagnostic Services, Saskatoon, Sk. and tested using real-time PCV-2 PCR. A Ct value less than 38 is considered positive. For IgG serum profiling, samples were forwarded to Biovet Laboratories, St. Hyacinth, Quebec and tested using a commercial quantitative PCV2 ab ELISA IgG (Ingenasa) procedure. An S/P ratio of greater than 45 is considered positive. Titer values were calculated and reported for each age group of twenty pigs as the group geometric mean.

Results

PCV-2 Serum Profile



In general, serum IgG levels are elevated in the pigs at weaning (4weeks), decline over several weeks before starting to increase sharply around 12 weeks of age. The level of PCV-2 viremia (% positive pigs) increases slowly from weaning through the nursery period; when transferred to grower rooms there is a rapid increase. Levels of viremia in the oldest pigs declined steeply.

Table 1. Mean Serum Titres for Age Groups

Age Group (weeks)	Geometric Mean
4	720
8	188
12	101
16	320
20	4587
24	8018

Conclusions and Discussion.

At 4 weeks of age the serum IgG levels would be attributed to maternal antibody derived from colostrum intake which declines slowly until the pigs are about 12 weeks old. After 12 weeks IgG produced by their own immune system activity results in the increasing levels of IgG. Thaker et al. reported a similar pattern of serum titres seen in Table 1 although the absolute values were notably different.

A low percentage of piglets were viremic at weaning. The sharp increase in viremia corresponds to approximately two weeks after the pigs are transferred from nursery to grower. At this age they are moved from fully slatted flooring to partially slatted concrete floors resulting in a higher level of environmental exposure to manure.

In spite of the high percentage of PCV-2 positive pigs observed in this study the level of clinical PCVAD in the grow-finisher herd remains remarkable low at less than 1%. Other management, environmental, genetic factors influencing this relationship need to be investigated.

Acknowledgements

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Reference

1. Thacker, B, Johnson J. 2013 Allen D. Leman Swine Conference Proceeding. 201