A field trial of Ingelvac® Aujeszky MLV in preventing swine pseudorabies virus latent infection

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INTRODUCTION

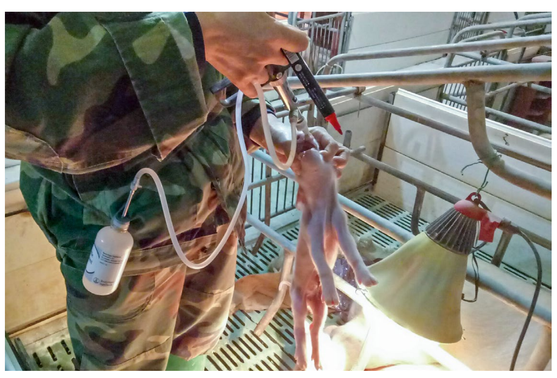
Before 2011, pseudorabies virus (PRV) gE gene-deleted modified live vaccines have been widely used in China farms for its outstanding immune efficacy and differential character between wild strain and vaccine strain. Swine Aujeszky's disease was well controlled or could even be eradicated in some farms by a combination of diagnostics, vaccination, culling positive animals and biosecurity management. But since 2011, there were many reports about outbreaks of PRV infection in different parts of China which were believed to be caused by new genetic mutant wild PRV strain. Up to now, although the epidemics of Aujeszky's disease are in a declining trend, gE antibody positive rate in herds is still very high with increased high respiratory disease and FCR. It is imminent to eradicate PRV in China's farm, and the key element for successful eradication is to prevent the field PRV strain colonization in nervous and non-nervous tissue and latent infection. This study demonstrates that Ingelvac® Aujeszky MLV prevents latent infection and reactivation of wild PRVstrain in gE positive farms by means of intranasal and intramuscular vaccinations and pig flows management.

MATERIALS AND METHODS

The trial was carried out in a 1200-sow farrow-to-finish one-site production system breeding pig farm in China, which has been PRV gE positive farm since 2014. Ingelvac® Aujeszky MLV mass vaccination in sows four times per year and intranasal vaccination in 1 day old pigs with booster vaccinations at 9 and 13 weeks age. The trial was started from Oct 2015 when the gE positive rate of sows was 87% and 100% in gilts. A total of twenty-four 1 day old piglets from 8 gE positive sows (3 piglets per sow) were randomly seleceted and ear-tagged. Blood samples were collected at age of 2, 4, 6, 8, 10, 14, 16, 18, 20 and 22 weeks. Samples were tested for gE and gB antibody with IDEXX PRV/ADV gB/gE Ab Test. At twenty-two weeks of age seven pigs were randomly selected, and were treated with dexamethasone in an attempt to induce virus reactivation (Mengeling, 1991). Virus reactivation was evidenced by realtime-qPCR to test gE gene from nasal swabs after the treatment. Because this was a breeding pig farm, farmer needed to sell gilts every week. We also followed up to test gE antibodies of 860 gilts sold to 3 small farms: Farm A, B, C with 260, 300, 300 gilts, respectively. These gilts were gE positive before sold and monitored three time per two months.

Picture 1: Farm layout

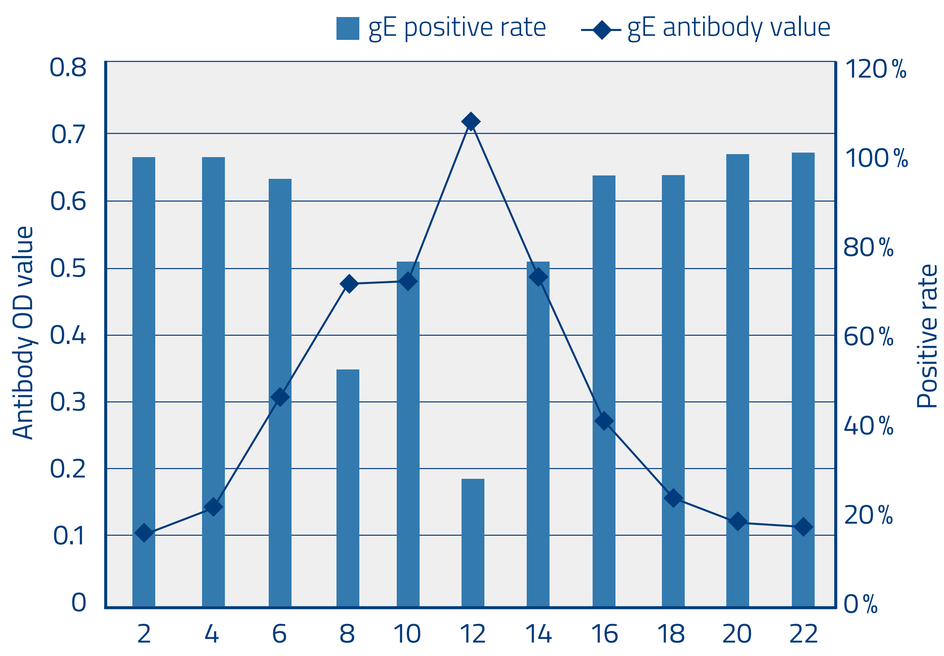
Picture 2: Intranasal vaccination



RESULTS

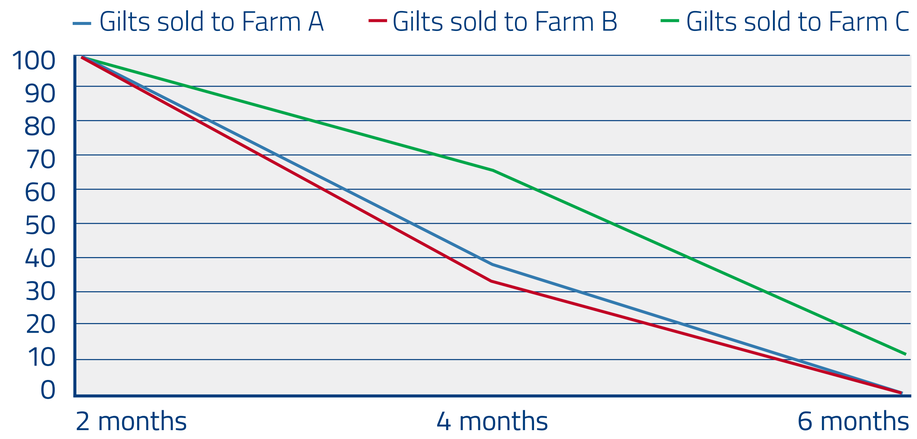
Average gE antibody S/N value of trial pigs was 0.119 and then reached up to the peak of 0.751 at 12 W, then declined suddenly from 14W with value 0.476 (see Figure 1). gE positive rate of piglets at 2W and 4Wwere 100% and decreased to lowest rate 28.57% at 12W, then it was increased to 100% at 20W and 22W. This increase was the result of a field PRV reinfection at 12 – 14 weeks, which peaked at 20 weeks.

Figure 1: Mean level of gE antibody and % positive samples



The realtime-qPCR result of nasal swabs from the 7 pigs after treatment with dexamethasone were gE gene negative. 826 gilts were 100% gE positive at first two months after they sold to other farms, then positive rate was in a downward trend; six months later only gilts sold to Farm C were 11.75% gE positive rate, while gilts sold to Farm A and B were negative.

Figure 2: gE positive rate of 860 gilts after sold to three different farms



DISCUSSION AND CONCLUSION

This trial showed that Ingelvac® Aujeszky MLV was efficacious in preventing field virus latency by means of intranasal and intramuscular vaccinations. Correction of pig flow as well as selling positive animals to other negative farms helped expediting the eradication. A combination of proper diagnostics, pig flow management and appropriate vaccination with a vaccine that prevents latent infection resulted in good control of PRV.