



PARALLEL, RANDOMISED FIELD EFFICACY, AND RETURN-ON-INVESTMENT STUDY OF A NEXT-GENERATION PRRSV2-MLV VACCINE COMPARED TO A CONVENTIONAL LINEAGE 1 BASED PRRSV2-MLV VACCINE IN A TYPE1+2 ENDEMIC SWINE HERD

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Introduction and Objectives

Porcine reproductive and respiratory syndrome viruses (PRRSV) are major challenges in global swine production. A next-generation PRRSV modified live virus (MLV) vaccine providing significantly reduces speed of NSP1 translation via targeted attenuation by Codon Pair Deoptimization (Coleman et al., 2008). Subsequent reduced viral replication and immune deviation is indicated to provide high efficacy, cross-protective capacity, and safety (Suh et al., 2026; Park et al., 2021). This field study aimed to compare the effectiveness of the CPD-PRRSV2-MLV with conventional PRRSV2-MLV in improving productivity and profits.

Materials and methods

In a Thai PRRSV1+2 endemic, stable 2,000-sow herd, 4,112, 2-week-old piglets were assigned randomly into two groups housed in separate barns with similar management and followed till slaughter. The CPD-MLV group (n = 2,136) received a CPD-lineage 5 PRRSV2-MLV (Persoporc™, Ceva, France), while the Con-MLV group (n = 1,976) received the conventional lineage 1 PRRSV2-MLV. PRRSV status was monitored by longitudinal serum PCR; sequencing of the circulating field strain was not achievable during the study period. Growth performance, mortality, and economic data were collected during nursery and finishing phases. Differences in mortality rates between groups were analysed using Fisher's exact test. Economic return was calculated using Gompertz standardization and current local prices.

Results and Discussion

PRRSV viremia was detected in both groups, with PCR positivity for a PRRSV2 at 6 weeks of age and PRRSV1 at 12 weeks of age. In the nursery phase, mortality was 1.12% vs. 1.32% (p = 0.047), and average daily growth (ADG) was 309 vs. 280 g/day for the CPD-MLV and Con-MLV groups, respectively. During the finishing phase, mortality was 3.00% vs. 3.08% (p = 0.092), and ADG was 896 vs. 862 g/day. Economic analysis revealed higher net profit per pig (48.27€ vs. 42.88€), of 5.39€ in favor of the CPD-MLV group (Table 1).

Under endemic PRRSV2 field conditions, the CPD-MLV vaccine demonstrated to be a valid alternative to a traditional MLV vaccine, shown on health, production, and economic outcomes compared to the conventional vaccine.

Conclusion

These findings support the value of the next-generation CPD-MLV vaccine in PRRSV2 control programs, offering benefits for herd health, animal welfare, and profitability.

References

1. Coleman JR *et al.*, 2008. Virus attenuation by Genome-Scale Changes in Codon Pair Bias. *Science* 320, 1784-1787.
2. Park C *et al.*, 2021. Intradermal co-inoculation of codon pair de-optimization (CPD) -attenuated chimeric porcine reproductive and respiratory syndrome virus (PRRSV) with Toll like receptor (TLR) agonists enhanced the protective effects in pigs against heterologous challenge. *Veterinary Microbiology*, 256, 109048.
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Vaccine group	n	Nursery phase		Finishing phase		Wean-finish	
		Mortality (%)	ADG (g/d)	Mortality (%)	ADG (g/d)	Net profit/pig	Δ+profit/pig
Persoporc CPD MLV	2,136	1.12	309	3.00	896	48.27 €	5.39 €
Traditional L1 MLV	1,976	1.32	280	3.08	862	42.88 €	na

Table 1. Improvements and profits following piglet vaccinated at 2woa with the next-generation PRRSV2 vaccine compared to a traditional PRRSV2 lineage 1 based MLV vaccine in a PRRSV2 endemic farm