



COMPARATIVE FIELD EVALUATION OF A NEXT-GENERATION CPD MLV PRRS VACCINE VERSUS A TRADITIONAL MLV IN A FARM WITH CONCURRENT PRRSV1 AND PRRSV2 CIRCULATION



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Introduction and Objectives

Porcine reproductive and respiratory syndrome (PRRS) remain a major cause of economic loss in swine production. In Thailand, co-circulation of PRRSV1 and PRRSV2 has been reported, complicating disease control. A next generation modified live vaccine (MLV) developed using Codon Pair Deoptimization (CPD) technology (Coleman et al., 2008) (Persoporc[®]) has been introduced to improve field performance (Suh et al., 2026; Park et al., 2021). This study aimed to compare the efficacy of a CPD MLV vaccine with a traditional lineage 1 MLV PRRS vaccine under field conditions with concurrent PRRSV1 and PRRSV2 circulation

Materials and methods

The study was conducted on a 1,500 sows farm with a PRRS stable sow herd. The wean-finish unit had a history of both PRRSV1 and PRRSV2 circulation. At weaning, piglets were allocated into two groups: (1) traditional lineage 1 MLV PRRS vaccine (n = 304) and (2) next-generation CPD MLV vaccine (Persoporc[®]) (n = 394). Groups were housed in separate barns under the same management conditions. Growth performance, mortality, and culling rates were recorded throughout the production cycle. Economic return was calculated using the Gompertz standardization and current local prices in a widely accepted Danish calculation model. Blood samples were periodically collected for PRRSV PCR testing and strain differentiation.

Results and Discussion

Losses and culling rates were 4.28% in the traditional MLV group and 3.55% in the CPD MLV group. ADG was 666 g and 658 g, respectively. FCR was 2.72 in the traditional group compared with 2.57 in the CPD group.

Feed cost per kg gain was 1.02 € versus 1.01 € and an additional profit of 2.45€ were generated by the next-generation PRRSV2 vaccine (Table 1).

PCR monitoring indicated that the traditional MLV group became PCR-positive from 6 WOA, whereas the CPD group became PCR-positive from 8 WOA. Both groups were confirmed PCR-positive for PRRSV1 and PRRSV2, demonstrating exposure to co-circulating field strains.

Conclusion

Under field conditions with concurrent PRRSV1 and PRRSV2 circulation, the next-generation CPD MLV vaccine was associated with improved feed efficiency compared with a traditional lineage 1 MLV vaccine. These findings suggest that CPD based vaccine technology may be a useful tool for PRRSV control also in complex epidemiological scenarios holding both PRRSV1 and -2 infections.

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 deoptimization (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. *Vet. Microbiol.* 256, 109048.
3. Suh J et al., 2025. Reproductive efficacy of a modified-live porcine reproductive and respiratory syndrome vaccine against Korean PRRSV-2 challenge in sows. *Front. Vet. Sci.* 12:1747817.

Vaccine group	n	Mortality (%)	ADG (g/d)	Wean-finish		
				FCR (kg/kg)	Net profit/pig	Δ+profit/pig
Persoporc CPD MLV	394	3.55	658	2.58	68.46 €	2.45 €
Traditional L1 MLV	304	4.28	666	2.72	66.00 €	na

Table 1. Improvements and profits following piglet vaccinated at weaning with the next-generation PRRSV2 vaccine compared to a traditional PRRSV2 lineage 1 based MLV vaccine in the diverse infective environment of a PRRSV1+2 endemic farm.