

## **MATERNALLY DERIVED ANTIBODIES REDUCE VACCINE EFFICACY AGAINST PORCINE REPRODUCTIVE AND RESPIRATORY SYNDROME**

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### **Introduction**

Modified live vaccines (MLV) are commonly used to reduce the impact of Porcine Reproductive and Respiratory Syndrome (PRRS) but limited efficacy is achieved in field conditions. We recently showed that maternally-derived neutralizing antibodies (MDNA) impair piglet immune response to vaccination. Here, we evaluated the impact of MDNA on vaccine efficacy against PRRS virus (PRRSV) challenge.

### **Materials and Methods**

Piglets with low (A-) or high (A+) level of MDNA were vaccinated (V+) or not (V-) with a genotype 1 MLV at both 3 (v1) and 4 (v2) weeks of age. Four weeks post-v2 (W4 pv2), piglets were either inoculated with a PRRSV field strain to evaluate vaccine protection, or housed with inoculated piglets to estimate transmission parameters. Blood was regularly collected to follow the postvaccination and post-infection (pi) viral load (RT-PCR) and immune response (IFN $\gamma$  EliSpot and antibody ELISA).

### **Results**

PRRS vaccine was detected in 69% and 6% of A-V+ and A+V+ piglets respectively at W1 pv2. At W4 pv2, 94% of A-V+ and 44% of A+V+ piglets seroconverted with a significant IFN $\gamma$  response induction in A-V+ group. After challenge, viremia was 100-fold lower at 10 days pi in A-V+ compared to V- inoculated piglets whereas viremia was not significantly reduced in A+V+ piglets. Similarly, in A-V+ contact piglets, virus load was lower than in other groups and the mean duration of viremia was shortened to 6 days compared with 12 days and 19 days for A+V+ and V- animals respectively. A lower transmission rate was estimated for A-V+ group: 0.15 [0.07-0.29] against 0.44 [0.18-1.76]

and 0.32 [0.14-0.68] for A+V+ and V- groups respectively.

### **Discussion & Conclusion**

We showed that MDNA impair vaccine efficacy against PRRS both in inoculated and contact piglets, probably by reducing the vaccine replication. These new data could help to improve vaccine protocols.