

Efficacy of vaccines

against PRRSV and PCV2b co-infection

Protection against disease caused by PRRS virus

PRIME PAC
PRRS

Prime Pac® PRRS is a type 2 PRRSV modified live vaccine for use in both young pigs and breeding age female pigs administered either intramuscularly or intradermally.

Protection against disease caused by porcine circovirus type 2 and *Mycoplasma hyopneumoniae*

PORCILIS
PCV ID

PORCILIS
M Hyo ID
ONCE

Porcilis
PCV M Hyo

Porcilis® PCV ID and Porcilis® M Hyo ID ONCE are intradermal vaccines specially formulated to be administered without a needle using the IDAL® (IntraDermal Application of Liquids) system.

Should we worry about PRRSV and PCV2 co-infection?

The co-infection of swine with PRRSV and PCV2 is common in clinical conditions and contributes to a range of polymicrobial disease syndromes.

01 Synergistic effects occur during PRRSV and PCV2 co-infection:

- Clinical signs and lesions in co-infected pigs are more severe than in PCV2 or PRRSV singularly infected pigs.
- Mutation rates of PRRSV may increase during PRRSV/PCV2 co-infection.

Are Prime Pac PRRS, Porcilis PCV M Hyo and Porcilis PCV ID + Porcilis M Hyo ID ONCE effective against PRRSV and PCV2 co-infection?

Study design

7 groups of 9 PRRSV-free, 3-week-old pigs

Each group vaccinated with a different vaccination protocol (Table 1), including:

Different vaccine products

PRIME PAC
PRRS

PORCILIS
PCV ID

PORCILIS
M Hyo ID
ONCE

Porcilis
PCV M Hyo

Different vaccine products

IM VS ID

Table 1

Treatment groups	No. of pigs	Vaccination	Vaccines/route of administration/ Dosage/day of vaccination				Challenge (Mixed)	
			PRRSV MLV ^a	PCVMH ^a	PCV2 ^a	M. Hyo ^a	HP-PRRSV-2 ^a	PCV2b
IMPP0/PCVMH7	9	Yes	IM / 0.1 ml / 0 DPV	IM / 2 ml / 7 DPV	-	-	Yes	Yes
IDPP0/PCVH7	9	Yes	ID / 0.2 ml / 0 DPV	-	ID / 0.2 ml / 7 DPV	ID / 0.2 ml / 7 DPV	Yes	Yes
IMPP0/PCVMH0	9	Yes	IM / 1 ml / 0 DPV	IM / 2 ml / 0 DPV	-	-	Yes	Yes
IDPP0/PCVH0	9	Yes	ID / 0.2 ml / 0 DPV	-	ID / 0.2 ml / 0 DPV	ID / 0.2 ml / 0 DPV	Yes	Yes
IM/TRF0	9	Yes	IM / 2 ml / 0 DPV ^a	-	-	-	Yes	Yes
NV/CH	9	No	-	-	-	-	Yes	Yes
NV/NC	9	No	-	-	-	-	No	No

IM: Intramuscular; ID: Intradermal; DPV: Days post-vaccination

Group IM/TRF0 vaccinated intramuscularly with a commercially available vaccine that contains PRRSV, PCV2 and *M. hyopneumoniae* antigens.

Study design

At 28 DPV, all groups but the negative control were intranasally co-challenged with a mixed inoculum of PRRSV and PCV2b.

Blood samples were collected at 0, 7, 14, 21 and 28 DPV, and at 3, 5, 7, 10, 14, 21, and 28 DPC

PRRSV humoral immune response

PRRSV cellular immune response: IFN-γ-secreting cells

PRRSV and PCV2 viremia post-challenge

At 7 DPC, 3 pigs of each groups were necropsied, and macroscopic lung lesions evaluated.

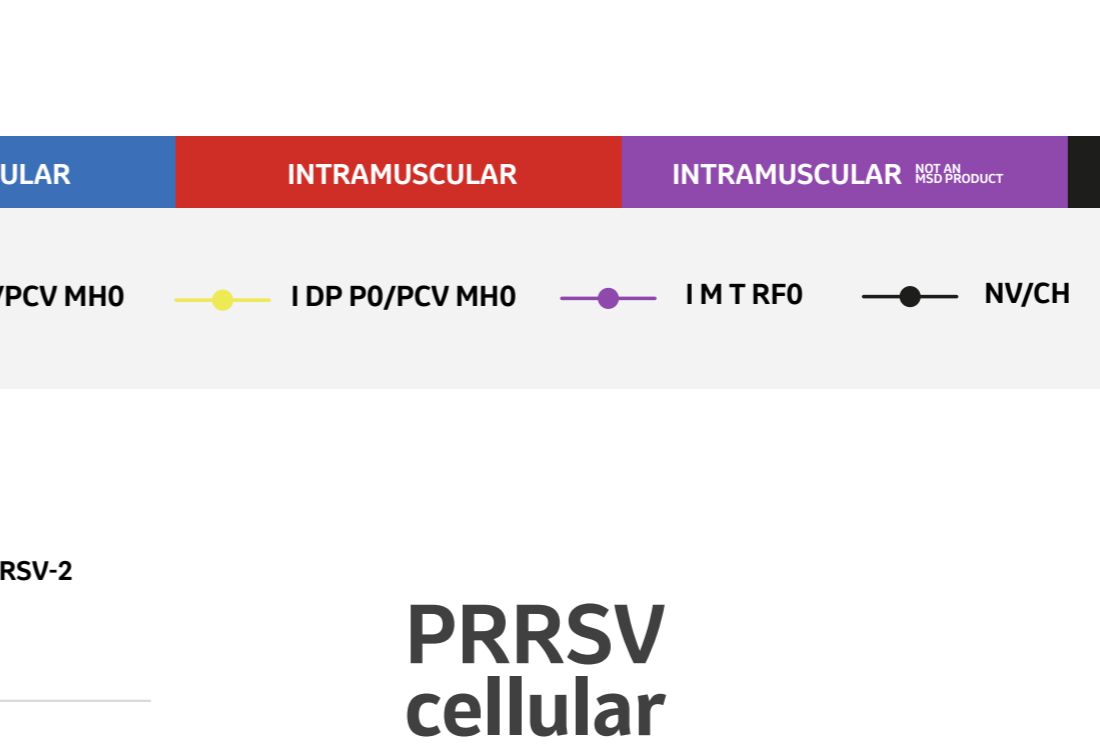


How is the PRRSV immune response?

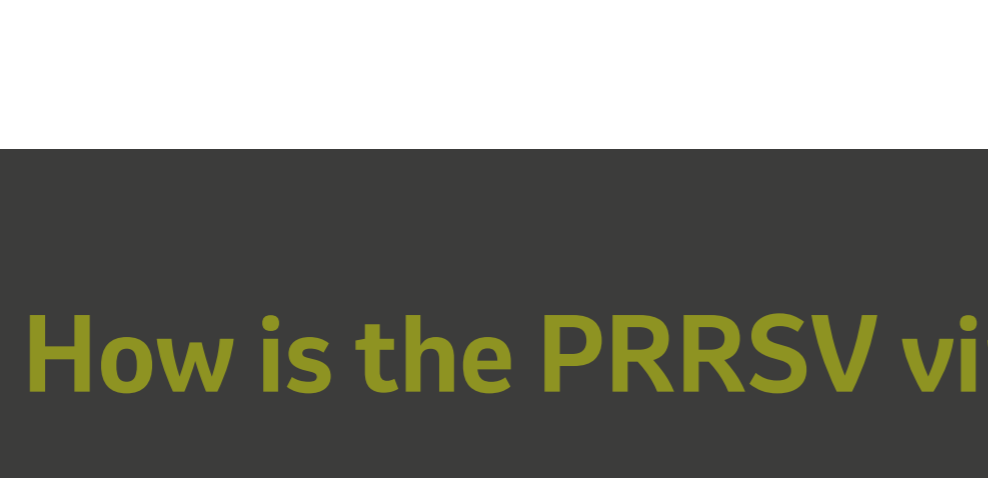
PRRSV humoral response

Prime Pac PRRS, administered either by the IM or ID route, induces PRRSV-specific antibody response.

PRRSV - SPECIFIC ANTIBODY RESPONSE MEASURED BY ELISA



PRRSV - SPECIFIC IFN-γ-SC AFTER HOMOLOGOUS PRRSV-2 MLV VIRUS (VACCINE VIRUSES) SIMULATION



PRRSV cellular response

Prime Pac PRRS, administered either by the IM or ID route, induces PRRSV-specific IFN-γ-secreting cells as early as 21 DPV.

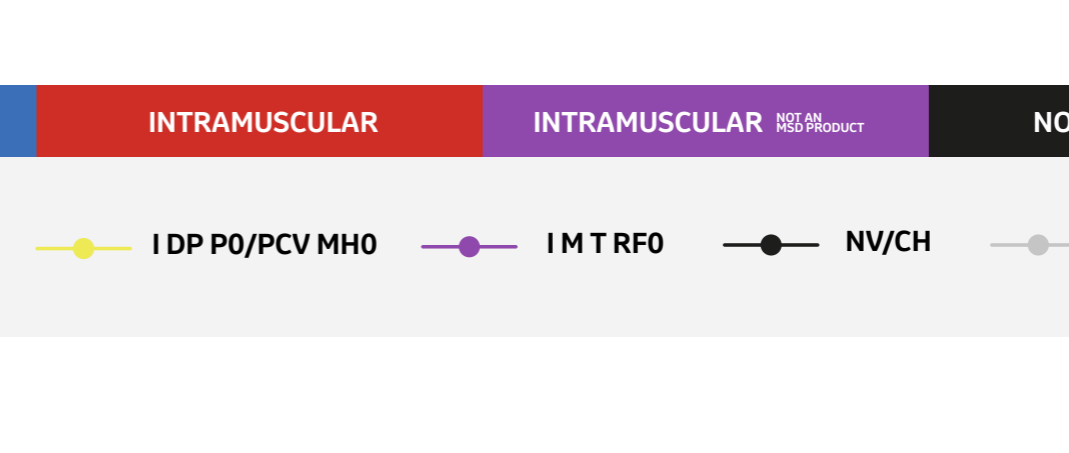
Significantly higher IFN-γ-secreting cells are observed at 28 DPV in groups vaccinated via ID.

How is the PRRSV viremia post-challenge?

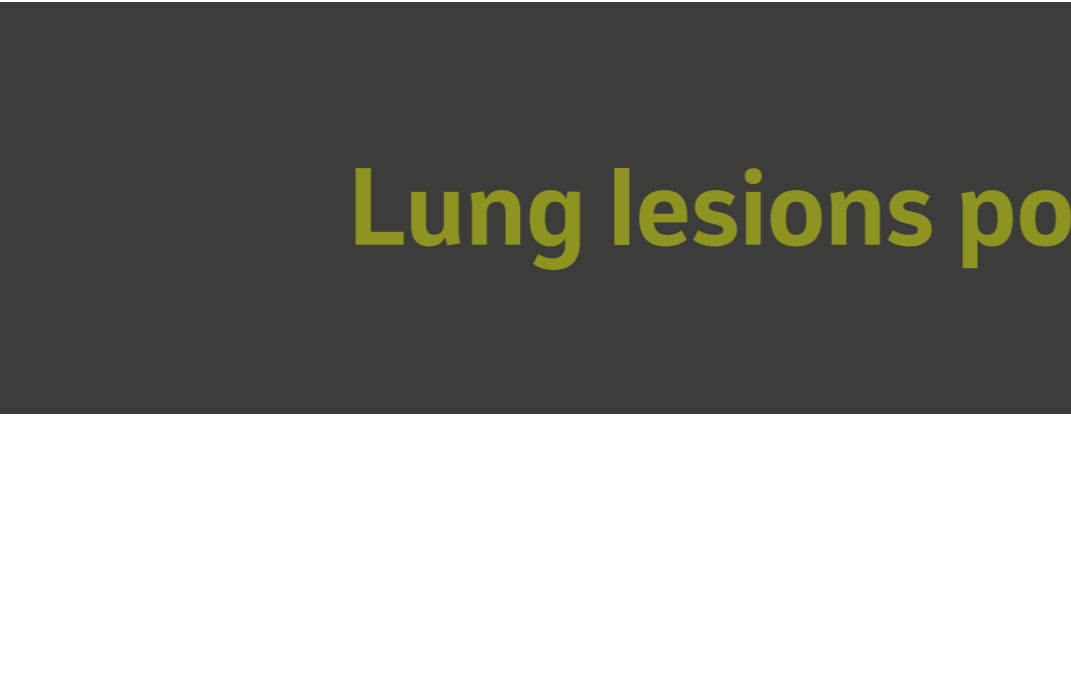
PRRSV viremia is developed as early as 7 DPV with Prime Pac PRRS, administered either by the IM or ID route.

Prime Pac PRRS reduces PRRSV viremia post-challenge, either when administered by the IM or ID route.

PCV DNA IN BLOOD



PCV DNA IN BLOOD



Both Porcilis PCV ID and Porcilis PCV M Hyo reduce PCV2 viremia post-challenge.

Significantly lower mean viral loads in blood are observed in pigs vaccinated with Porcilis PCV ID at 14 DPC.

Lung lesions post-challenge

The protocol including Prime Pac PRRS intramuscular + Porcilis PCV M Hyo seven days afterwards (IMPP0/PCVMH7) shows a significantly lower lung lesion score.

MACROSCOPIC LUNG LESION SCORE AT 7 DAYS POST-CHALLENGE (DPC)



Keypoints

01 Prime Pac PRRS generates strong humoral and cellular immune responses against PRRSV, either administer via intradermal or intramuscular.

02 Both PRRSV and PCV2 viremia post-challenge are greatly reduced in vaccinated pigs.

03 Lung lesion scores are significantly lower in vaccinated pigs.

