# Comparison of immune response after intradermal and intramuscular vaccination against PRRS, PCV2 and *M. hyopneumoniae* (Myho) in a finishing herd

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## Background

PRRSV, PCV2 and Mhyo are pathogens within porcine respiratory disease complex (PRDC). Vaccination is a key tool to control PRDC. Vaccination by intramuscular (IM) injection has been applied for many years. It has limitations such as: stressing the animal, affecting the quality of meat, risking iatrogenic disease transmission. Intradermal (ID) vaccination is an alternative way of application. This study compares the immune response and zootechnical performance after intradermal vaccination against PRRSV, PCV2, and Mhyo (ID Group) and intramuscular injection (IM Group), in finishers under standard farming conditions in Vietnam.

## Material and Methods

In total, 200 five-day old pigs were randomly assigned to two different groups: Group 1 (ID-G; n=100) and Group 2 (IM-G; n=100). At 14 days of age, piglets were vaccinated against PRRSV; ID-G intradermally with PRIME PAC® PRRS using IDAL 3G and IM-G using a PRRS MLV vaccine intramuscularly. PCV2 and Mhyo vaccination: at 21 days of age; ID-G was vaccinated intradermally using IDAL 3G TWIN with Porcilis® PCV ID and Porcilis® M HYO ID ONCE vaccine while IM-G was vaccinated intramuscularly with a combined PCV2 and Mhyo vaccine. Pigs were weighed individually at 24, 35 and 175 days. Zootechnical parameters such as ADWG and Mortality rate were also recorded separately. Blood samples were collected (20 pigs/group) at 10, 70, 105 and 54 days and evaluated for antibody response for PRRS, PCV2 and Mhyo.

*Table 1. Vaccines used in the study.*

| Vaccine | ID Group | IM Group | Age |
|---|---|---|---|
| PRRS | PRIME PAC™ PRRS[1] 0.2ml | PRRS MLV IM Vaccine 2ml | 14 days |
| PCV2 | Porcilis® PCV ID[1] 0.2ml | Combined PCV2+Mhyo Vaccine 1ml | 21 days |
| Mycoplasma hyopneumoniae | Porcilis® M HYO ID ONCE[1] 0.2ml | Combined PCV2+Mhyo Vaccine 1ml | 21 days |

## Results

Performance of both groups showed no statistical difference (P>0.05) for both ADWG (ID-G: 0.637; IM-G: 0.636) and Mortality rate (ID-G: 4%; IM-G: 4%). Antibody titers for PRRSv revealed marked increase for both groups post vaccination but there was no statistical difference between two groups. Mhyo and PCV2 antibody titers for ID group were significantly higher compared with the IM group.

*Table 2. Impact on production parameters.*

| Group | Average weight at selling (Kg) | Days to market (day) | ADG (Kg/day) |
|---|---|---|---|
| ID | 103.22 ± 20.37 a | 175.18 ± 24.19 a | 0.637 ± 0.140 a |
| IM | 103.17 ± 19.76 a | 177.35 ± 19.31 a | 0.636 ± 0.131 a |

**Values with different superscript within the same column are statistically significant (P<0.05)*

*Table 3. Antibody titers of piglets before and after vaccination*

| Time of sampling | PRRSV (vaccinate at 14 days of age) | | M. hyopneumoniae (vaccinate at 21 days of age) | | PCV2 (vaccinate at 21 days of age) | |
|---|---|---|---|---|---|---|
| | ID Group | IM Group | ID Group | IM Group | ID Group | IM Group |
| Before vaccination | | | | | | |
| 10 days | 0.641 ± 0.512a | 0.476 ± 0.392a | 0.725 ± 0.603a | 0.655 ± 0.661a | 6.423 ± 1.521 a | 6.152 ± 1.478a |
| After vaccination | | | | | | |
| 70 days | 1.591 ± 0.845a | 1.589 ± 0.841a | 0.153 ± 0.197b | 0.077 ± 0.130a | 6.978 ± 1.328 b | 5.775 ± 1.015a |
| 105 days | 1.557 ± 0.539a | 1.429 ± 0.630a | 0.107 ± 0.143b | 0.021 ± 0.051a | 6.508 ± 1.138 b | 5.632 ± 0.847a |
| 154 days | 1.030 ± 0.599a | 1.250 ± 0.602a | 0.493 ± 0.445a | 0.468 ± 0.461a | 5.565 ± 1.320 a | 5.197 ± 1.782a |

**Values with different superscript within the same column are statistically significant (P<0.05)*

## Discussion and conclusion

The study showed that intradermal route of vaccinating animals with PRRSv, PCV2 and M. hyopneumoniae was able to show similar response with that of intramuscular route. Administering vaccines via this route has additional benefits associated with needle-free vaccination such as reducing stress and improving farm biosecurity.

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