

“HETEROLOGOUS CELL-MEDIATED IMMUNE RESPONSES AGAINST PRRS VIRUS IN GILTS
VACCINATED INTRAMUSCULARLY AND INTRADERMALLY WITH UNISTRAIN® PRRS”

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INTRODUCTION

Current knowledge on PRRS virus immunology is still limited but it seems clear that modified live vaccines (MLV) are a reasonable choice for the immunisation of pigs (1). Cell-mediated responses after MLV vaccination could be responsible for limiting the duration of viraemia, and consequently the spread of the virus (2). Recently, interest in intradermal vaccination has increased due to research on the skin and subcutaneous tissues immunology. Although the intradermal PRRSV vaccination has been investigated (3), the high variability between different virus isolates makes it advisable to assess the intradermal response for each vaccine strain. The aim of this study was to compare the cell-mediated immune response developed in gilts vaccinated intramuscularly and intradermally with UNISTRAIN® PRRS.

MATERIALS AND METHODS

14 Landrace x Pietrain 6-month-old PRRSV-free gilts were randomly divided into 3 groups: IM (n=6), ID (n=6) and Control (n=2). IM and ID groups were vaccinated with UNISTRAIN® PRRS (VP-046BIS strain. HIPRA, Spain); 2 ml intramuscularly and 0.2 ml intradermally, respectively ($10^{5.2}$ TCID₅₀/dose). The Control group was intramuscularly injected with PBS (2 ml). Heparinised blood samples were collected at time of vaccination, and at 14, 28, 42 and 56 days post-vaccination (pv) to obtain peripheral blood mononuclear cells (PBMC). Frequencies of PRRSV-specific IFN-γ-secreting cells (IFN-γ-SC) were measured as previously reported (2) to assess the heterologous responses against 5 different genotype-1 isolates from clinical outbreaks (Table 1).

Table 1. Strains used to assess cell-mediated immune response

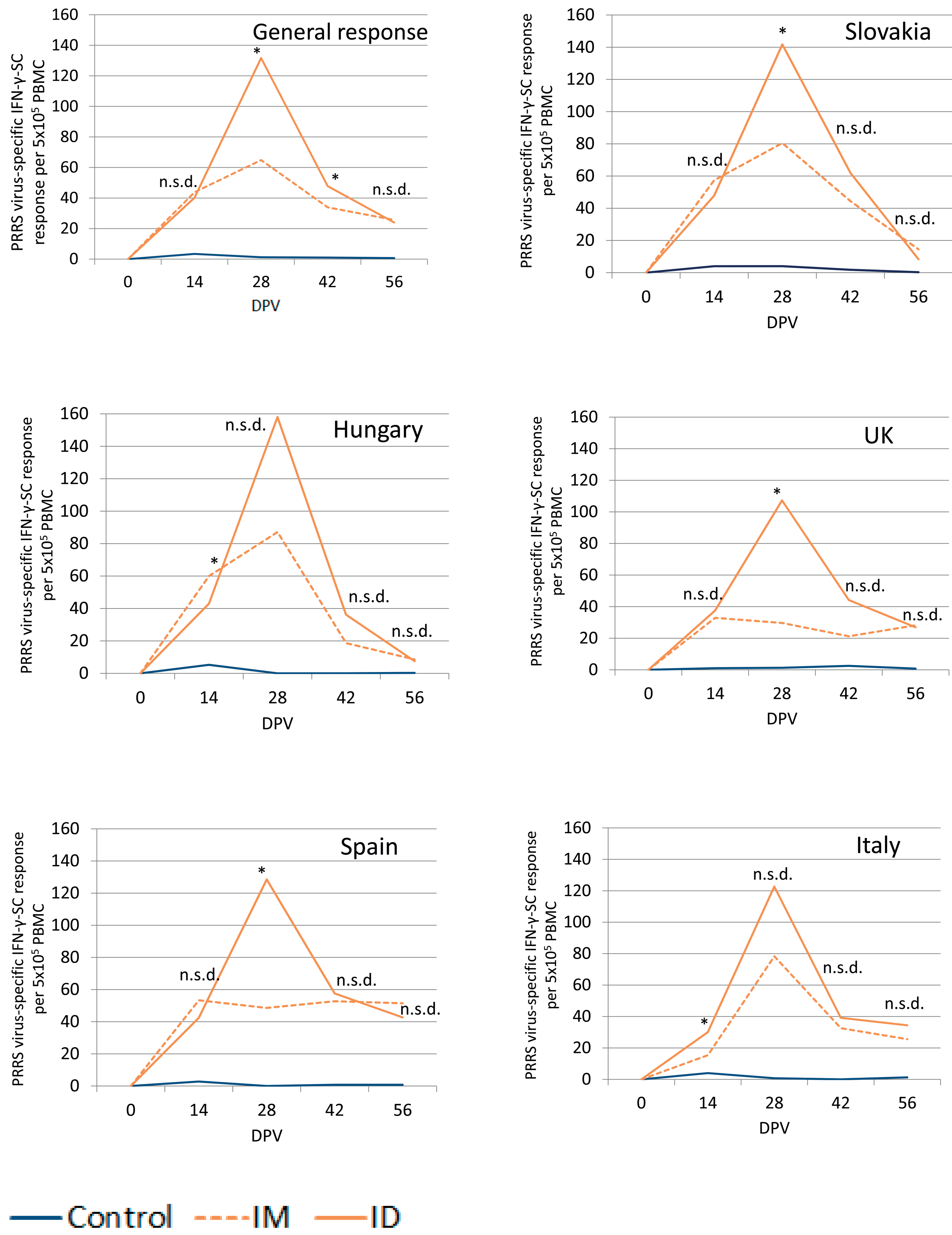
Year of isolation	Country	Similarity to the VP-046 BIS (ORF5)
2005	Slovakia	90%
2011	UK	88%
2011	Hungary	98%
2005	Spain	92%
1992	Italy	89%

IFN-γ-SC for each isolate was compared by means of the Kruskal-Wallis test using StatsDirect 2.8.0.

RESULTS

Results are shown in Figure 1. For all strains and vaccination routes, IFN-γ-SC was already detectable at day 14 pv. For the IM group, the peak of IFN-γ-SC was observed at day 14 pv for Spain and UK isolates, and at day 28 pv for Italy, Hungary and Slovakia isolates. For the ID group, the peak of IFN-γ-SC was at 28 pv for all isolates. For the ID group, IFN-γ-SC values were statistically significantly higher than the IM group at 14 pv for Hungary and Italy isolates and at 28 pv for Slovakia, UK and Spain isolates. As expected, IFN-γ-SC mean values for all strains were null or <5 in the Control group.

Figure 1. IFN-γ-SC per 5x10⁵ PBMC against 5 genotype-1 field isolates in IM, ID and Control groups.



DISCUSSION

As expected, the variability of IFN-γ-SC responses observed among different strains was not related to the percentage of ORF5 similarity with the vaccine strain. Results demonstrated that the ID administration of UNISTRAIN® PRRS confers higher levels of cell-mediated immune response than using the IM route. This phenomenon suggests that ID route could be considered a candidate to develop future PRRS vaccines.

REFERENCES

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