

COMPARATIVE STUDY OF POST-INJECTION PRODUCT LOSS AND LOCAL REACTIONS AT THE INJECTION SITE WITH HIPRADERMIC® AND ANOTHER COMMERCIAL NEEDLE-FREE DEVICE IN SOWS

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BACKGROUND AND OBJECTIVES

Needle-free injection devices have been designed as a new option for intradermal vaccination on swine farms with the aim of reducing the stress of vaccination and iatrogenic disease transmission. However, concerns about possible vaccine loss and local reactions have been raised by field users (Jones et al., 2005). The aim of this study was to compare product loss and the safety of two different commercial needle-free devices and their respective vaccines.

MATERIALS AND METHODS

A total of 156 sows in the mating-control phase from a commercial PRRS-positive farm were classified into 3 groups according to number of births. The sows were then randomly divided into two groups (G1 or G2) and vaccinated intradermally in the perianal area. G1 was vaccinated with UNISTRAIN® PRRS using Hipradermic® (0.2 ml/dose) and G2 was vaccinated with a commercial MLV PRRS vaccine using its associated needle-free device (0.2 ml/dose). Non-injected vaccine volume was measured immediately after application by a volumetric (ml) method (by capillarity using a microhematocrit tube) and a perception rating scale method. Local reactions were evaluated after vaccination and 4h later. Different statistical tests were performed according to the recorded data.

RESULTS

G1 showed a lower vaccine loss (0.019 ± 0.14 ml) compared with G2 (0.026 ± 0.14 ml; p -value=0.011; Figure 1). There were no statistically significant differences regarding number of births.

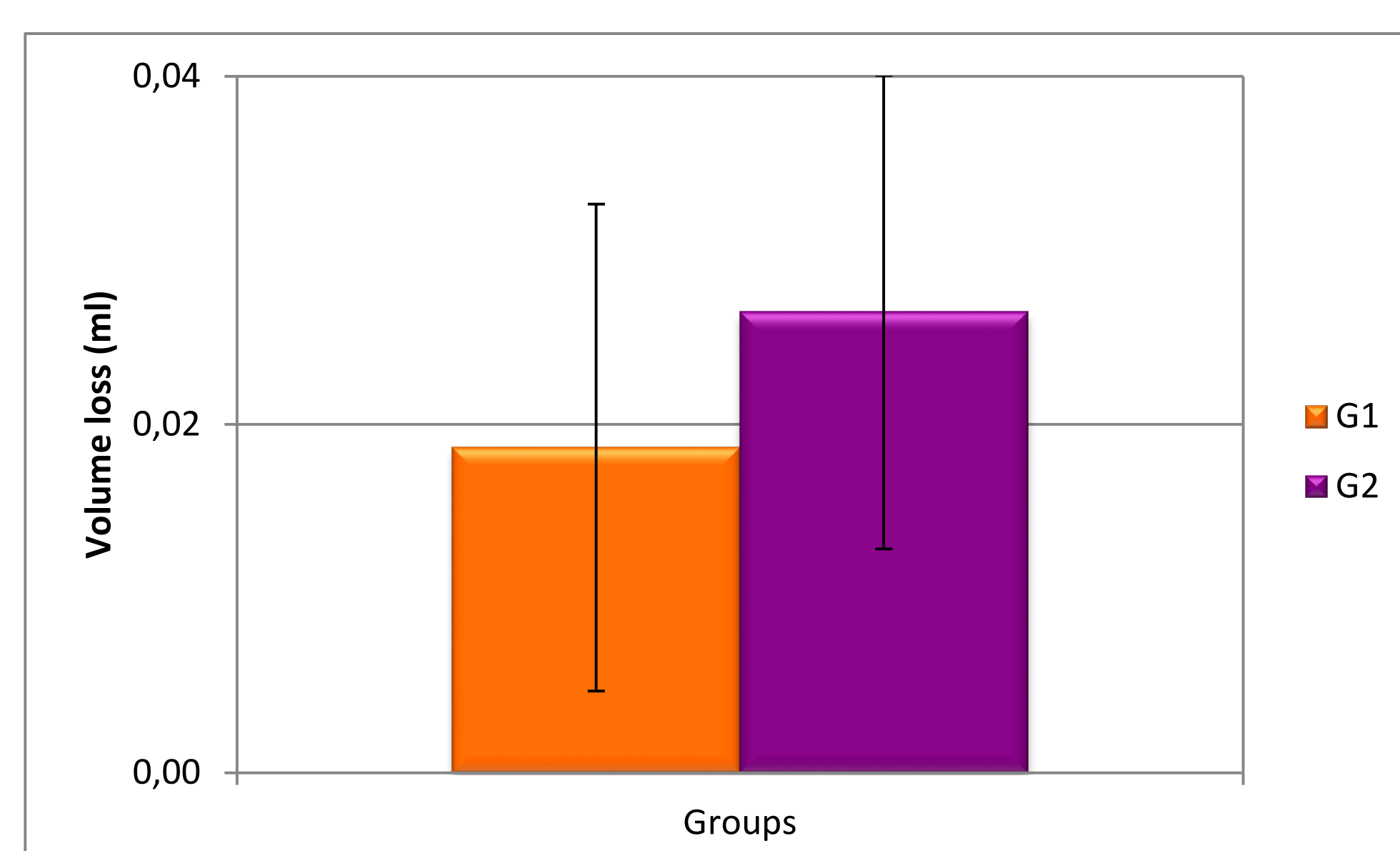


Figure 1. PRRS vaccine volume lost after administration to two groups of sows, expressed as mean and standard deviation for each group.

The qualitative evaluation also showed lower loss perception in G1 based on percentage losses (Figure 2). The mean product loss score in G1 was lower (1.05 ± 0.66) than in G2 (2 ± 0.88 ; p -value=0.0001).

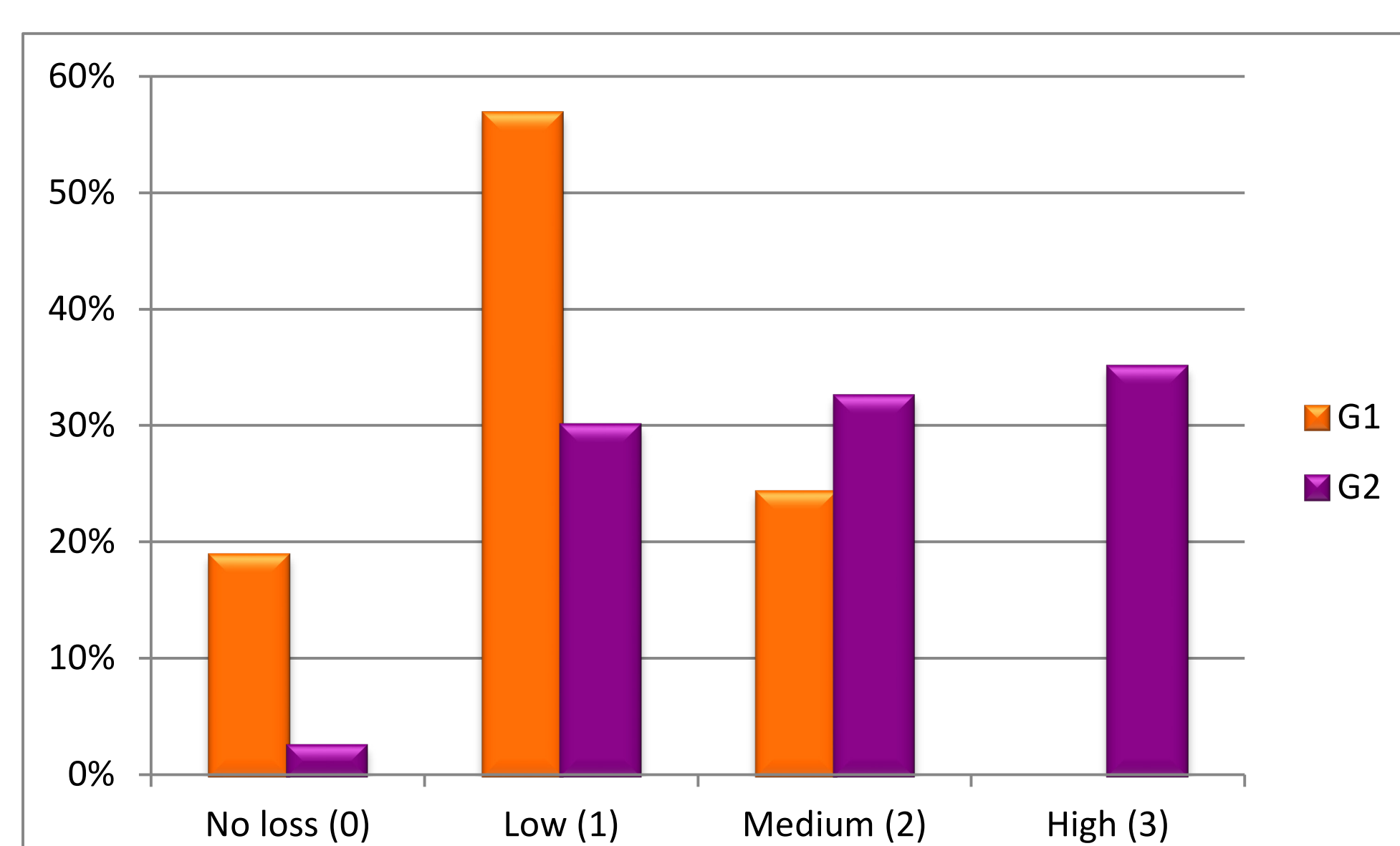


Figure 2. Chart of vaccine losses by experimental group. Group 1, n= 77; Group 2, n= 79.

Regarding local reactions (Figure 3), G1 showed a lower percentage of animals with blood loss after vaccination (46.5% less) or haematoma at 4 hpv (24.5% less) than G2 (Figure 4). More papules were observed in G1 than in G2 (Figure 4).

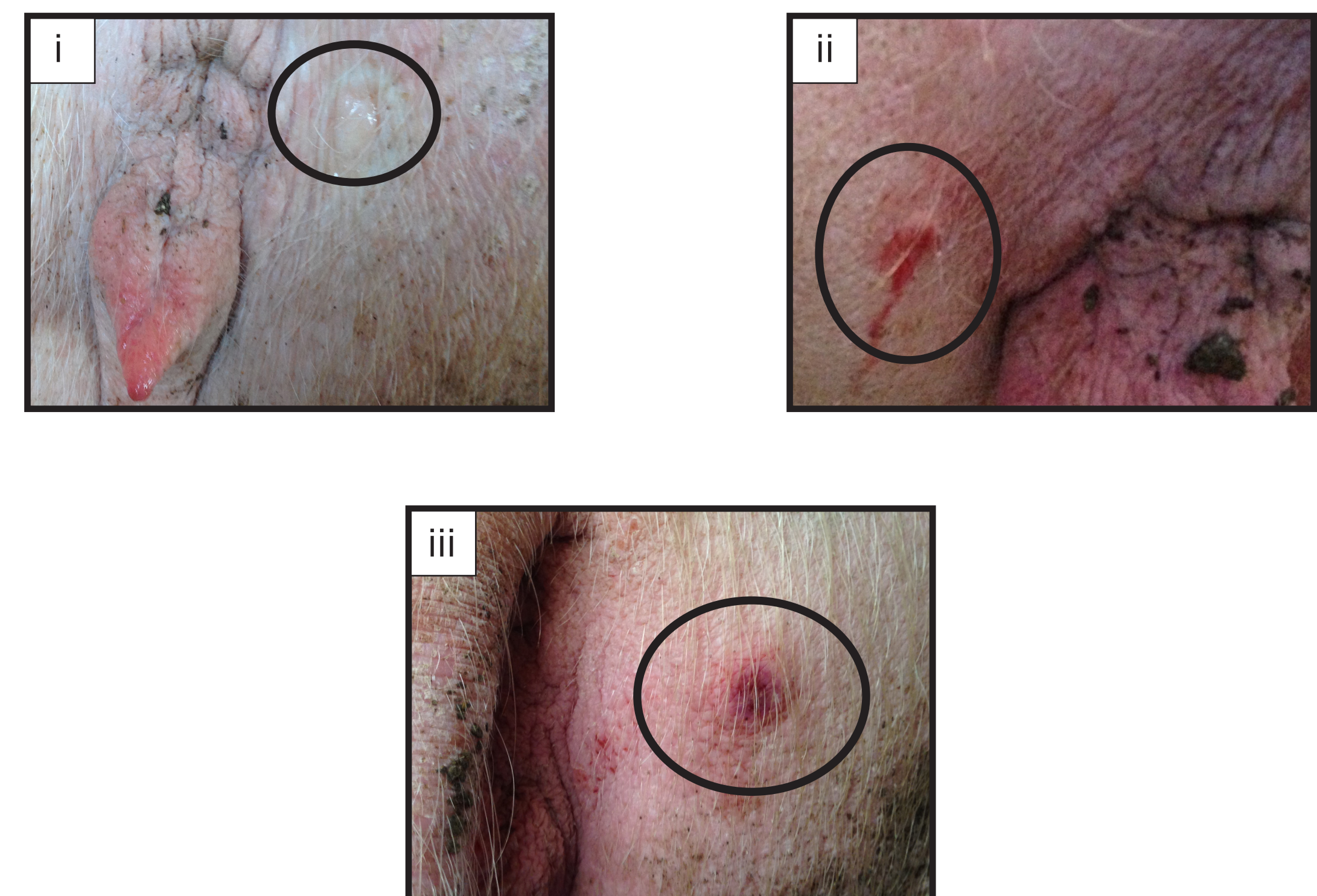


Figure 3. Main local reactions observed after vaccination. (i) = papules; (ii) papules with blood; (iii) haematomas. The vaccination site is identified with a circle.

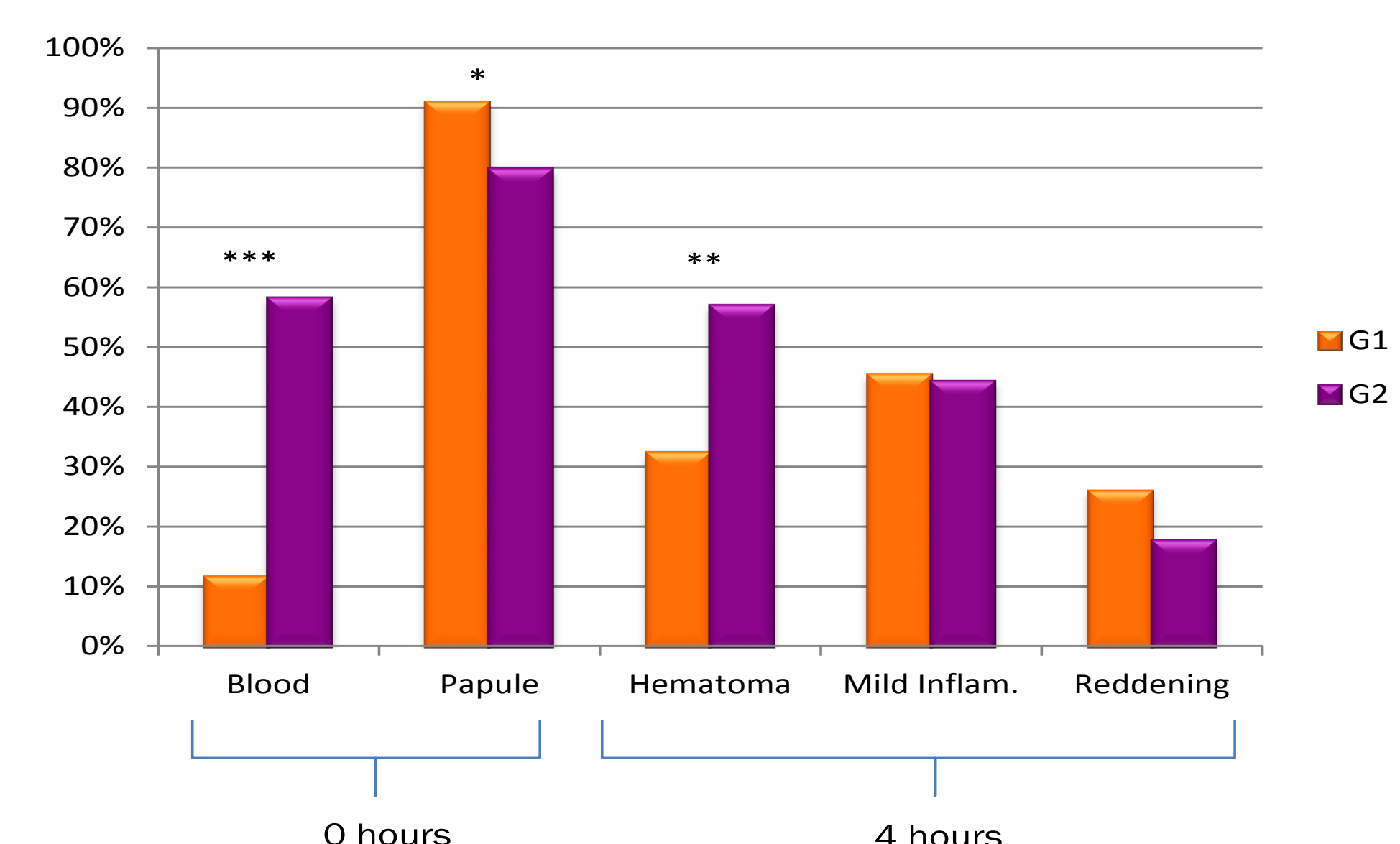


Figure 4. Proportion of animals with local reactions 0 and 4 hours post-vaccination. Group 1, n= 77; Group 2, n= 79; * = Statistically significant differences (Pearson's Chi-Square, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$).

DISCUSSION AND CONCLUSIONS

Post-injection loss of product volume was lower in UNISTRAIN® PRRS using Hipradermic® compared to the alternative combination. Local reactions such as papules, bleeding or haematomas were observed with both vaccinations; however, the number of animals with bleeding or haematomas was notably higher in the alternative commercial MLV PRRS vaccine. Therefore, the UNISTRAIN® PRRS and Hipradermic® combination achieved a better user perception based on a lower loss of product (less than 10%) and greater safety than the other combination of a commercial PRRS vaccine and its needle-free device.

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REFERENCES

Jones G.F., et al. 2005 J. Swine Health Prod; 13:19-27.