

# EVALUATION OF STRESS IN PIGLETS FOLLOWING VACCINATION WITH AN INTRADERMAL NEEDLE-FREE DEVICE USING CORTISOL CONCENTRATIONS

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## INTRODUCTION

Vaccination of piglets is commonly performed via intramuscular injection using needles. However, needle injection presents several challenges, including stress in animals due to pain, the risk of pathogen transmission, and the potential for broken needle fragments to remain in the tissue. Among these concerns, stress in piglets is particularly important not only from an animal welfare perspective<sup>1</sup> but also in terms of farm productivity and economic efficiency. This study evaluates the stress response induced by vaccination using an intradermal needle-free device (Hipradermic<sup>®</sup>, HIPRA) by measuring cortisol concentrations in both blood and oral fluid.

## MATERIALS AND METHODS

In this study, piglets were randomly assigned to either a Hipradermic<sup>®</sup> group that received PRRS MLV vaccination or a control group that received no treatment, with nine piglets randomly selected per group. Blood samples were collected 30 minutes after vaccination. Additionally, oral fluid samples were obtained by suspending 3 ropes in each pen between 30 and 60 minutes post-vaccination. Cortisol concentrations in serum and pooled oral fluid were measured in each group, and linear regression analysis was conducted to evaluate the correlation between the two.

## RESULTS

For serum samples, cortisol concentrations were measured in eight samples from the control group and nine samples from the Hipradermic<sup>®</sup> group, with one outlier identified in each group. The mean serum cortisol concentrations were  $2.35 \pm 1.22$  ng/mL in the control group and  $1.66 \pm 1.18$  ng/mL in the Hipradermic<sup>®</sup> group, with no significant difference observed between the groups (Figure1). Similarly, the cortisol concentrations in oral fluid were 0.4 ng/mL in the control group and 0.4 ng/mL in the Hipradermic<sup>®</sup> group, with no significant difference detected.

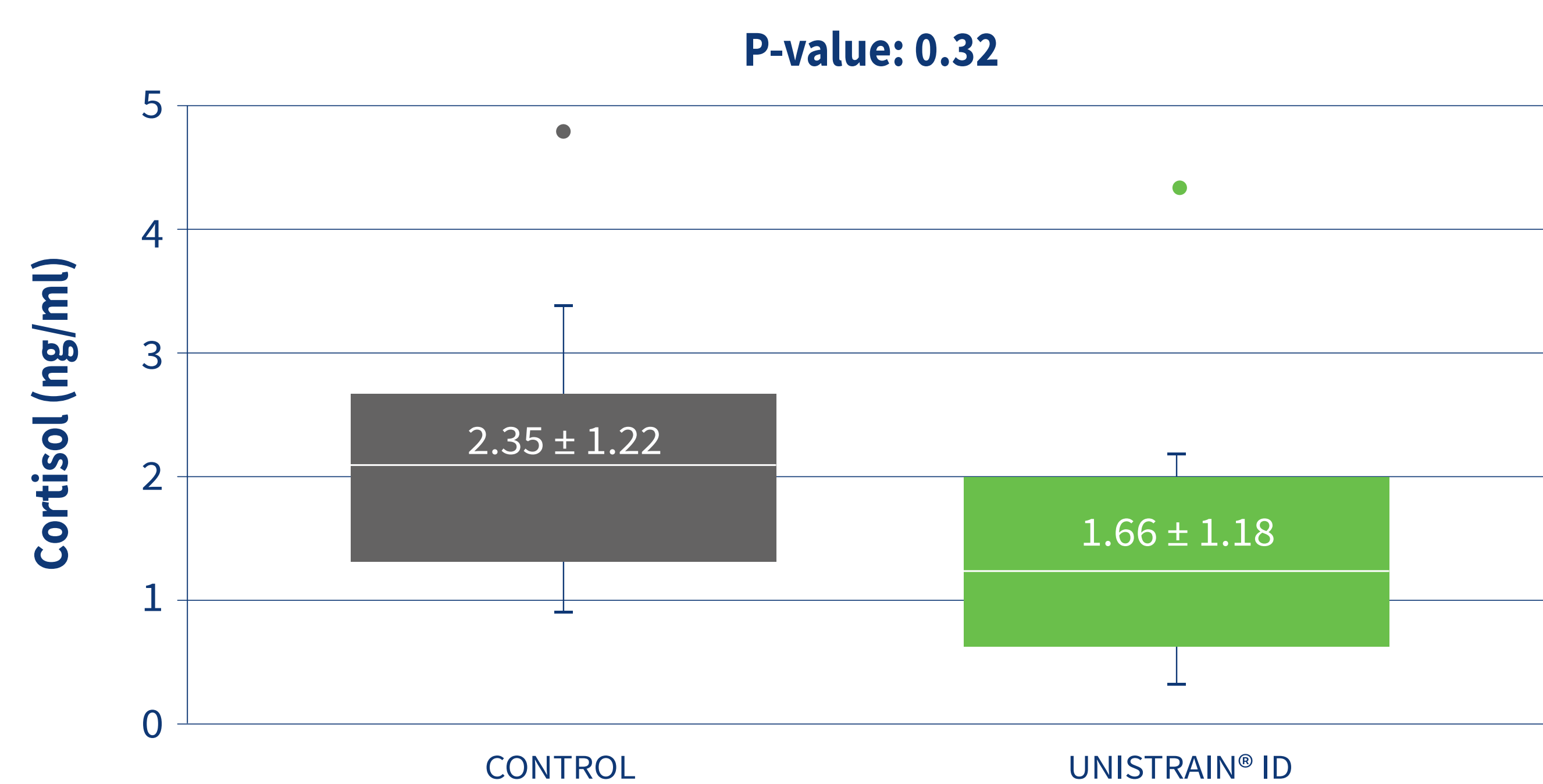


Figure 1. Cortisol concentrations in blood samples.

## CONCLUSIONS

The results of this study revealed no significant difference in cortisol concentrations between the control group, which received no treatment, and the Hipradermic<sup>®</sup> group. This suggests that vaccination using an intradermal needle-free device induces minimal stress in piglets, to a negligible extent.

## REFERENCES

1. Dalmau et al. Intramuscular vs. Intradermic Needle-Free Vaccination in Piglets: Relevance for Animal Welfare Based on an Aversion Learning Test and Vocalizations. *Front. Vet. Sci.*, Volume 8 –2021.