Introduction

Porcine Respiratory and Reproductive Syndrome (PRRS)\(^1\), caused by the PRRS virus (PRRSV) is a disease which has a significant impact on the global pig industry. The objective of this work is to develop and validate an experimental challenge model for PRRSV to facilitate the efficacy testing of novel vaccines and therapeutics.

Materials and Methods

A total of 23, seven week (+ 1 week) old piglets (PRRSV antibody negative) were included on the study. On arrival the animals were weighed, blood sampled and allocated to two groups of 10 and one of 3.

One week after arrival (on Day 0) the two groups of 10 were challenged by the intranasal route with 2ml of a PRRSV serotype 1, sub type 2 isolate (BOR\(^1\) or LT3\(^2\)) at a concentration of 1x10^6 TCID\(_{50}\)/ml. Challenge was repeated the next day. Post challenge, clinical observations were carried out daily for 14 days.

On Day 14, the animals were euthanased and the lungs of each animal were removed. Gross pathological abnormalities were recorded. Lung samples were removed for virus isolation and histology.

Results

Post challenge rectal temperature increases were observed in 9 of the 10 animals from the LT3 group and 10 of the 10 from the BOR group on at least two occasions post challenge, with 8 animals from each group recorded to have high temperatures on at least two consecutive days. Only two observations of increased temperatures were recorded in total for the control animals during the monitoring period. Peak group mean temperatures were recorded on Day 6 post challenge (Figure 1).

No other clinical abnormalities were observed during the monitoring period.

At necropsy all animals from the challenged groups were observed to have swollen, congested lungs with pathology typical of PRRSV infection with mean total scores in the two groups of 12 and 12.7 respectively (out of a total of 20). The control animals had no visible pathology and scored as 0 (Figure 2).

Conclusion

The study demonstrated that intranasal challenge with isolates of PRRSV serotype 1, sub-type 2 (BOR or LT3) is reproducible and consistent with a low level of variability between animals. The model will be applicable in the testing of veterinary medicinal products to control and prevent PRRSV infection in pigs.

References