Porcine respiratory disease - sequential challenge models

Porcine respiratory disease causes considerable economic losses worldwide and often occurs following exposure to a combination of different pathogens including *Mycoplasma hyopneumoniae,* Porcine reproductive and respiratory syndrome virus (PRRSV) and *Pasteurella multocida*.

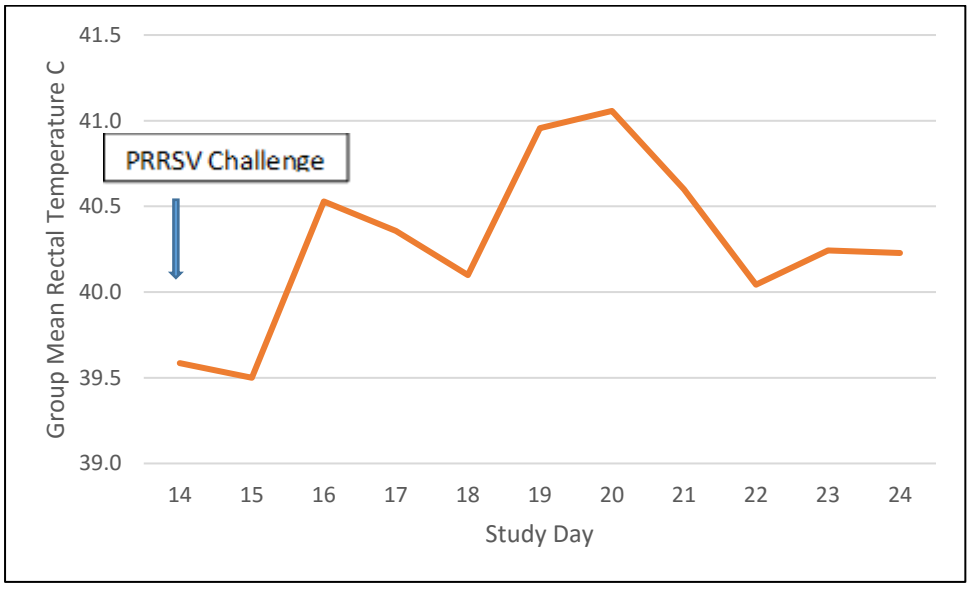
In an attempt to mimic respiratory disease more consistent with field type infections for use in efficacy testing of veterinary medicinal products we have developed and validated models with sequential challenges of two different pathogens in piglets of 4-8 weeks of age:

(i) *Mycoplasma hyopneumoniae /Pasteurella multocida.*

(ii) *Mycoplasma hyopneumoniae* / PRRSV

In validation studies a sequential, challenge with *M. hyopneumoniae* followed by *P. multocida* resulted in progressive and reproducible porcine respiratory disease with less variability between animals and more moderate levels of clinical disease than is observed with either isolate alone. The total lung lesion score was significantly higher in challenge groups versus the unchallenged control. In addition, dual challenge resulted in higher clinical scores than single challenge ($P<0.01$). Lung to body weight ratio was higher and daily weight gain from day 15 to day 28 of the study was lower in dual challenged pigs.

In a second model, challenge with *M. hyopneumoniae* followed by PRRSV, resulted in increased levels of lung damage, increased rectal temperatures (Figure 1), increased clinical symptoms (respiration and demeanour) and decreased growth rates after challenge. The data generated for each animal was more consistent with less variability that is seen with either model alone. PRRSV was identified from serum and lung samples by PCR and *M. hyopneumoniae* was isolated from the lung lavages of all challenged animals.



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The new models will be used for testing the efficacy of products against different pathogens involved in porcine respiratory disease, the sequential challenge enables the generation of experimental data in a field type situation which will inform and add value to the product development pathway.

The models are available for use in contract studies at Moredun Scientific, please contact us for further details info@moredun-scientific.com