

2C-115 Establishing the underlying causes of pleurisy to enable the development of effective prevention and treatment measures

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Aims and Objectives

Pleurisy has a huge impact not only at the production stage but also at the abattoir with time delays at slaughter, increased waste and compromised carcass weights. In recent years an increase of pleurisy at the abattoir has been noted in Australia and overseas. As there is no knowledge of the species of bacteria and the virus involved in pleurisy at the abattoir in Australia this study was undertaken to close this knowledge gap.

Key Findings

A total of 46 Queensland farms were involved in the project. The most prevalent bacteria were *Mycoplasma hyopneumoniae* and *Streptococcus suis*, found on 34 and 38 farms, respectively. Twenty nine farms had positive results for PCV2. Other bacteria were *Actinobacillus pleuropneumoniae* (7 farms), *Haemophilus parasuis* (1 farm), *Pasteurella multocida* (24 farms), *Actinobacillus* species (29 farms), *Mycoplasma hyorhinis* (4 farms), *Streptococcus porcinus* (1 farm), *Streptococcus minor* (1 farm), *Mycoplasma flocculare* (9 farms) and Bisgaard Taxon 10 (1 farm). Most of the farms had more than one species of bacteria.

Most of the bacteria were in low numbers, however, some species such as *S. suis*, *P. multocida* and *A. pleuropneumoniae*, were in high numbers being indicative that they are potentially the causative agents of the pleurisy. There was a higher risk of a positive result for *M. hyopneumoniae* if the batch had a pleurisy score greater than 10 percent.

The high percentage of farms positive for *S. suis* type 1 at the abattoir was surprising. Even though pigs are carriers of *S. suis*, outbreaks of disease associated with this organisms are normally between three to 12 weeks of age. Hence, the common presence of *S. suis* type 1 in the lungs of pigs with pleurisy at about 22 weeks of age is surprising.

Chronic pleurisy is supposed to be attributed to a variety of pathogens; hence it is not surprising that no single infectious cause for all instances of pleurisy could be found. Of the bacteria found only four are regarded as important primary respiratory pathogens – *M. hyopneumoniae*, *A. pleuropneumoniae*, *H. parasuis* and PCV2. Of these primary pathogens, only *M. hyopneumoniae* and PCV2 were found in a large percent of the farms. The finding of these two pathogens in a high percent of farms is a concern as these pathogens act synergistically with other pathogens causing severe respiratory disease in combination with other pathogens. As most of the other bacteria found in this study are regarded as secondary pathogens, indicates that the finding of *M. hyopneumoniae* and PCV2 in a large percentage of farms is an important finding. This suggests that the protocols in place for the control of *M. hyopneumoniae* and PCV2 should be revisited.

Application to Industry

Pleurisy has a tremendous impact on the cost of the production and the cost of the slaughter process. Studies in England have shown that the herds with pleurisy prevalence running at >10% at slaughter experienced post-weaning mortalities rates around 3.3% higher than unaffected units. These studies have predicted that each 1% increase in pleurisy prevalence relates to a reduction of 1.55 – 2.5 g/day average lifetime weight gain at batch level or in other terms, each 1% increase in pleurisy prevalence at batch level resulted in 0.07 kg decrease in average slaughter dead weight per pig. In other words pleurisy is costing the producer a lot of money. It is vital to understand the bacterial and viral species that are associated with chronic pleurisy. For the farmer the knowledge gained on the bacterial species involved in pleurisy, as well as the antimicrobial sensitivity, is useful and will ensure targeted investigations and the development of appropriate effective treatment and prevention programs.

The main points from this research are the importance of the two primary pathogen species in pigs with pleurisy, PCV2 and *M. hyopneumoniae*. As well, the importance of the secondary pathogens, which have so far been ignored in the fight against respiratory disease, was shown.

The outcomes achieved are the knowledge of the bacterial and viral species that are found in pigs with pleurisy at the abattoir and this knowledge will give farmers the opportunity to investigate if these species are controlled on their farm and implement control measures.