Prevalence of *Pasteurella multocida* and detection of viruses in the nasal tract of Scottish calves

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Introduction

Pasteurella multocida is an important cause of bovine respiratory disease (BRD) in cattle; it has also been found in the upper respiratory tract of apparently healthy animals. BRD is multifactorial - other pathogens include parainfluenza virus (PI3), bovine respiratory syncytial virus (BRSV), bovine herpes virus (BoHV-1), bovine viral diarrhoea virus (BVDV), *Mannheimia haemolytica* and *Mycoplasma* spp.

Aims

i) Determine the prevalence of *P. multocida* carriage within the upper respiratory tract of calves from Scottish beef and dairy herds
ii) Determine whether novel molecular techniques could be utilised to detect viral nucleic acid from nasal swab material
iii) Explore associations between potential respiratory pathogens, both bacterial and viral.

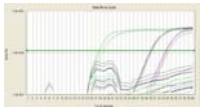
Materials and Methods

A cross-sectional survey was carried out with randomly selected farms. Ten calves under 10 weeks from 6 beef and 6 dairy farms from each of 6 regions of Scotland were targeted.

A deep nasal swab was taken for bacterial culture and placed into Amies transport medium. A second swab was placed into virus transport medium (VTM) and blood was collected.

In the lab swabs were plated and cultured for *P. multocida*; confirmation was by species specific PCR. Specific plates were prepared for *Mycoplasma*.

DNA/RNA was extracted from VTM and real time RT-PCRs were performed for PI3, BRSV, BoHV-1 and BVDV. Serum was tested for antibody to BVDV.



Results

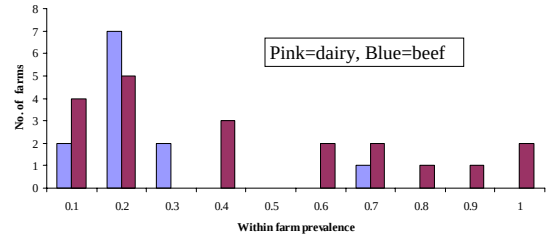
P. multocida

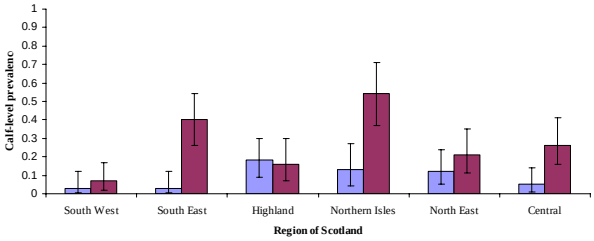
•68 farms were sampled Feb-June 2008

•47% of farms had at least one positive animal

- •12/33 beef farms
- • 20/35 dairy farms

•Animal prevalence of *P. multocida* was 17% (105/616)





Other respiratory pathogens

•The novel RT-PCRs detected the presence of viral RNA.

•There was evidence of a relationship between coexistence of *P. multocida* in the nasal tract with *Mycoplasma* spp. (P=0.06) and PI3 (P=0.04).

•8 animals from5 farms were positive for BVDV RNA, suggesting persistent or transient infection.

•Only 4 farms were seronegative for BVDV.

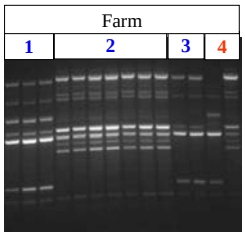
Conclusions and Future work

Carriage of *P. multocida* is prevalent and more dairy calves are affected than beef.

Associations between detection of *P. multocida* and clinical signs of BRD are being explored, as well as management factors.

The molecular epidemiology of *P. multocida* is being studied to determine transmission dynamics within and between farms. In general homogeneity of strains is seen within farms (**farms 1-3**, right), although farms that buy in stock had more than one strain of *P. multocida* (**farm 4**, right).

Associations between strain of *P. multocida* and clinical signs of BRD will be explored.



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