International Pig Topics'

Pighealth BYTES

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102 – Mycoplasma

Introduction

Mycoplasma is a genus of bacteria that lack a cell wall and so are only surrounded by their cell membrane. Not having a cell wall, they are unaffected by many common antibiotics that target cell wall synthesis, such as penicillin or other β-lactams. Mycoplasma are the smallest free-living organisms, being between bacteria and viruses in size.

They can be pathogenic or non-pathogenic and several species are actually pathogenic to man, including Mycoplasma pneumoniae, which is an important cause of atypical pneumonia. Most animals (mammals and birds) have their specific mycoplasmas and these are often associated with respiratory, reproductive and joint diseases as well as mastitis in mammals. These mycoplasmas tend to have limited host ranges.

Until quite recently mycoplasmas were also referred to as pleuropneumonia-like organisms (PPLOs) because of their similarity to the causative agent of contagious bovine pleuro-pneumonia, which we now know to be a mycoplasma.

Pathogenesis

Mycoplasma are usually associated with mucosal surfaces, residing extracellularly in the respiratory and urogenital tracts. They rarely penetrate the submucosa, except in the case of immunosuppression. Mycoplasma can grow and multiply in the environment but they do this best in the host animal. Therefore, it can be appreciated that important sites for multiplication are those which favour the dissemination of mycoplasma to other animals by respiratory discharges or via semen.

Diagnosis

Often a presumptive diagnosis can be made on the basis of the clinical signs and gross pathology found on post mortem examination. Confirmation can be made by isolating the causal agent but this has limitations on its value as isolation can take up to a month. Thus, serology (RPT and ELISA) and PCR are often used.

Treatment

Antibiotics that work by acting on the cell wall are ineffective as there is no cell wall but those acting on the cell's internal structures are effective. Thus, tetracyclines, macrolides, such as tylosin and erythromycin, and fluroquinolones can be used for the treatment of mycoplasma diseases in farm animals.

Control of mycoplasma infections

Biosecurity is important and vaccination is a possible preventive strategy. However, in view of the vertical transmission of mycoplasma a key control strategy is to keep breeding stock free. This is relatively easy if breeding stock are on a separate farm but does involve regular monitoring to confirm breeder freedom from mycoplasma status. This strategy has been used successfully in the poultry and pig industries.