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Introduction

The easiest way to consider mycoplasma is to consider them as a group of micro-organisms that are half way between bacteria and viruses, in that they have some of the properties of each. Like bacteria they have a cell 'wall', although it is more of a cell membrane. They can be killed by antibiotics and can be grown on agar plates in the laboratory. Like viruses, some strains, for example *Mycoplasma gallisepticum*, are able to invade cells.

Mycoplasmas are widespread in nature and are found in many animal species, including man, plants and insects. Mycoplasmas tend to be relatively host specific. Non-pathogenic strains are known in poultry, for example *M. gallinarum* and *M. gallinaceum*.

Classification

Mycoplasmas are members of the class Mollicutes, order Mycoplasmatales, genus *Mycoplasma*. *Mycoplasma* has more than 120 known species. Another genus of the Mycoplasmatales is the *Ureaplasma*, while *Acholeplasma* are a family (*Acholeplasmataceae*) order within the *Acholeplasmatales*.

Currently, some 25 avian mycoplasmas are known, of which 10 are known to infect chickens, seven turkeys and three ducks. Well known ones include *M. anatis* (duck), *M. columbinasale* and *M. columbinum* (pigeons), *M. meleagridis* and *M. iowae* (turkeys) and *M. gallisepticum* and *M. synoviae* (several species including chickens and turkeys).

Disease picture

Mycoplasmas are associated with infections of the respiratory, reproductive and joint systems. Some only infect one of these but others, such as *M. synoviae*, are associated with infection of all three. Clinical signs and pathology reflect the body systems that are infected.

Mycoplasmas can be transmitted vertically, that is from one generation to the next through the egg. For this reason the consequences of an infected breeder flock can be serious and this is something best avoided. Should a breeder flock become infected a medication strategy encompassing breeders, progeny and the eggs can be instigated. Egg treatments will be covered in a future Poultryhealth BYTES.

Mycoplasmas can also be transmitted via the semen and this can have serious consequences at breeder level as artificial insemination can disseminate the disease. This is a good reason to seriously review the merits of stag farms in turkey breeding because if a stag farm becomes infected it can infect many hen farms. Remember mycoplasma, as is the case for other pathogenic micro-organisms, can be shed for a few days before clinical signs become apparent.

Mycoplasma infection is often complicated, especially in the commercial generation, by secondary infections such as *E. coli* infection.

Disease control

The ideal scenario is to keep breeder farms free of the main mycoplasmas (*M. gallisepticum*, *M. synoviae* plus, in the case of turkeys, *M. meleagridis* and *M. iowae*) and in the case of the first three of these the status of breeders can be monitored by a simple rapid agglutination blood test.

In chickens *M. gallisepticum* freedom should be achievable. In many countries *M. synoviae* freedom is more of a challenge with a significant proportion of the broiler breeder flocks in many countries being *M. synoviae* positive.

An important aspect of maintaining mycoplasma freedom is good biosecurity and in this context the mixing of breeding stock from many sources and the practice known as 'spiking' are not recommended. Spiking is the practice of bringing young cockerels into a broiler breeder flock to replace their older counterparts who are beginning to fail in fulfilling their role.

Disease treatment

There are several very good antibiotics, such as tylosin and tiamulin, for treating mycoplasmosis, but they have the drawback that they are not effective against *E. coli* if secondary *E. coli* infection is encountered. If both entities are present the use of a fluoroquinolone, such as enrofloxacin may be the preferred medication. Other antibiotics such as tetracycline and chlortetracycline have this dual action, but the presence of antibiotic resistance in the *E. coli* strain that is involved merits consideration. Unfortunately, this is now occurring with enrofloxacin.

Vaccination

Vaccination against *M. gallisepticum* and *M. synoviae* are available options but it must be remembered that with some vaccines it is impossible to differentiate on blood test vaccinal antibodies from those caused by the disease itself. This must be given serious consideration before deciding to vaccinate a breeder flock.

Vaccination, especially against *M. gallisepticum*, is an accepted management tool on many large, multi-age table egg farms where the infection would be continually recycling if vaccination was not used.