

# Mycoplasmosis



**In this group we know several sero types that can be found in poultry, but there are just a few that can cause problems:**

- **Mycoplasma Gallisepticum (serotype A)**
- **Mycoplasma Synoviae (serotype S)**
- **Mycoplasma Meleagridis in turkeys (serotype H)**

## Mycoplasma Gallisepticum

After an incubation period of 4-21 days broiler chickens show mild symptoms or nasal discharge. If other infections, for instance Coryza, I.L.T., Infectious Bronchitis and/or E.Coli, come along, the symptoms are much more serious: severe respiratory problems, airsacculitis, CRD, with sometimes high mortality (up to 30%).

Also the climate in the houses plays an important role in the severity of the symptoms: poor ventilation causes more problems.

M.G. infected laying flocks have a slightly depressed production. However, the M.G. makes the bird more sensitive for other infections and environmental factors like in broilers.

Control of New Castle Disease is more difficult if the flock is infected with MG: the best protection against ND is achieved by aerosol vaccination, but in a M.G. infected flock, this would cause a too strong post-vaccinate reaction.

### Monitoring

Routine serological control of breeder flocks is usually carried out by Rapid Plate Agglutination. This is a simple and cheap test, but has some limitations:

- false negative reactions can occur; especially in young flocks, till 12 weeks of age, the test is not reliable.
- false positive reactions can also occur, caused by:
  - infections with other Mycoplasma's (e.g. M.S.)
  - frozen sera
  - shortly after vaccination with oil-based vaccines
  - bacterial contamination of sera.

False positive reactions can be differentiated from real positives by:

- Plate dilution/tube agglutination test: repeat the agglutination with diluted sera
- Haemagglutination Inhibition Test (H.I.)  
This test is more specific, but becomes later positive than the agglutination test.

We diagnose a flock as MG infected if:

3% of the samples have agglutination titres >1:8 and/or an H.I. titre >1:16.

An other option for routine serology is ELISA. This test is far more expensive than the agglutination test and gives at least as many false reactions.

It is possible to confirm a serological diagnosis by isolation of the Mycoplasma. However, this is a rather complicated technique. A positive result gives a definite diagnosis, but negative results are not significant.

A more modern technique is using DNA probes for M.G. These are very specific, but also rather expensive. The test can be made more sensitive by using a Polymerase Chain Reaction (P.C.R.) prior to the probe, to multiply the DNA.

A further test kit can also differentiate vaccine strain (F strain) of M.G. from field strain.

### Prevention

The infection can take place by the vertical way (from infected Parent Stock through the hatching egg to the broiler) or by horizontal infection: contact with infected chickens (for instance in the hatchery), infected air-borne dust or droplets, people and equipment. Air borne infections are only possible on short distances. Peoples and vehicles/ equipment are far more important in the spread of the infection.

For this reason a very strict hygienic system is essential to keep a flock free:

- Limit visitors and movement of vehicles between farms to the absolute minimum.
- Make sure that all visitors change clothes and footwear on the entrance of the farm and disinfect their hands. Showering is even better, and certainly recommended for Grand Parent Farms.
- As most Mycoplasma's are killed within two days, we keep two days as a minimum safety period between visiting possibly infected farm and visiting a M.G. clean farm.

Staff should not be allowed to have any contact with poultry outside their work. Otherwise, the same period of two days counts.

On multi-age farms, it is difficult to control M.G..

On a single-age farm, M.G. control mainly means control of movement of staff and material.

### Vaccination

Vaccines are used to limit the clinical problems of M.G., or in a process to make a multi-age farm M.G. free. Vaccination should be seen as a tool in this process; just vaccination can not guarantee a full control of M.G. in a flock, or a complete prevention of M.G. in the offspring.

We consider M.G. vaccination as a good option for commercial layers. In emergency cases, it can be used to clean up an infected breeder site.

Various vaccines are used:

#### 1. Live vaccines

- F-strain (from various producers):  
Can produce immunity, nevertheless profits in such flocks are less than in unvaccinated flocks that maintained their freedom from M.G.. The vaccine can spread up to 8 weeks after vaccination. It is a cheap solution, but we would not recommend it.
- 6/85 strain (Mycovac-L, Intervet) is not spreading and safe. It can be differentiated from field strains by plate agglutination test.

#### 2. Killed vaccines

Killed vaccines are safe to use and give generally a reasonable protection. They should be given by injection and are rather expensive.

### Medication

The (semi) permanent use of antibiotics (Tylan®, Tiamutin®, Lincospectin®, Baytril®) can reduce the damage of a M.G. infection, but it will never really solve the problem, because the flocks are still infected. As soon as one stops the medication the disease increases again. Furthermore there is a risk that after some time of treatment, the mycoplasma develops resistance against the antibiotics; and in the third place: it is a rather expensive system.

Medication can not fully prevent an infection. This system can be useful for a relatively short period of time, but in the meantime other control systems have to be developed.

If a flock proves to be positive for M.G. there are several possibilities to prevent vertical transmission to the broiler flocks:

a. The P.S. flock can be killed.

This is the only completely safe procedure to prevent further spread of the disease, but of course it is not always practical.

b. Treatment of the hatching egg with Tylan® (or Baytril®):

- injection into the hatching eggs with 0.2 mg tylosine by hand or automatic (Embrex system)
- egg dipping in a 2500 ppm containing tylan solution, using the temperature-difference method or the pressure-difference method.

c. Egg-heating method (Yoder)

Eggs are heated, before setting, at 115° F during 12-14 hours. This system is not very reliable.

### **Mycoplasma Synoviae**

This organism is far less important than *M.gallisepticum*.

*M.synoviae* itself does not cause major problems, but together with other respiratory infections it can have some negative influence. Although the name *M.synoviae* gives some thoughts to Infectious Synovitis, there is definite no real connection between the two.

Just as *M.gallisepticum*, *M.synoviae* is more related to the respiratory tract.

The conclusion can be that, if possible, it is better to keep flocks free of *M.synoviae*, but it is not disastrous if a P.S. flock is infected.

Also for M.S., Rapid plate Agglutination is most used as screening. False positive reactions occur, like in case of M.G. Tube agglutination (and H.I.) can confirm the diagnosis.

ELISA can be used, but can also give false positive reactions.