Mycoplasma gallisepticum (MG) infection of chickens is associated with airsacculitis, reduced feed conversion, reduced egg production efficiency and increased condemnation at slaughter. MG infection is one of the costliest disease problems confronting the poultry industry.2

The ProFLOK® MG ELISA kit is a rapid and specific presumptive screening test for the detection of antibody to most conventional MG strains in chicken serum samples. The kit was designed for screening large numbers of chicken sera from numerous flocks. However, additional conventional MG serologic testing, including serum plate agglutination (SPA) and hemagglutination inhibition (HI), as well as culture techniques are needed to confirm MG-negative and MG-infected chicken flocks.

### Features and benefits

- Excellent specificity; there were no false positive reactions when tested with reference sera for numerous infectious agents of poultry, including *M. synoviae*, *Staphylococcus aureus* and killed vaccine components
- Excellent plate-to-plate coefficient of variation (CV) demonstrating consistent reproducibility among batches over time
- Good sensitivity
- USDA-licensed; National Poultry Improvement Plan (NPIP)-approved screening test
- Long shelf life of 24 months for easy inventory management

### Kit performance

#### Comparison to MG HI antibody titers3

Comparison between the ProFLOK MG ELISA kit and the MG HI test was evaluated. In a sensitivity test, the ProFLOK MG ELISA kit reported positive results for both National Veterinary Services Laboratories (NVSL) control sera tested.

<table>
<thead>
<tr>
<th>SERUM SAMPLE</th>
<th>MEAN SP RATIO +/- SEM</th>
<th>HI ANTIBODY TITER</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVSL MG control</td>
<td>1.980 +/- 0.012</td>
<td>1:160</td>
</tr>
<tr>
<td>NVSL MG control</td>
<td>0.971 +/- 0.009</td>
<td>1:40</td>
</tr>
</tbody>
</table>

Values are the mean +/- standard error of the mean (SEM) of 30 wells (six replicates/plate, five plates).

#### Specificity3

The ProFLOK MG ELISA kit demonstrated excellent specificity; no false positive reactions were observed when tested with a panel of monospecific sera of numerous infectious agents of chickens and the MG ELISA standard test panel from NVSL. Monospecific sera to *M. synoviae*, *S. aureus* and killed vaccine components were tested as these antigens previously have been reported to cause false positive reactions with commercial SPA antigens and in other commercially available MG ELISA kits.24

#### Reproducibility3

In a test using 90 replicate chicken serum samples, each assayed on 10 ProFLOK MG ELISA plates, results showed that the well-to-well CV ranged from 4.44% to 8.73%. The plate-to-plate CV averaged 5.88%.
Sensitivity

The ProFLOK MG ELISA kit was able to detect different MG antibody titer levels (i.e., high, medium and low) from pooled sera of MG-positive flocks.

Table 2: Mean SP ratio of various MG-positive serum samples and controls

<table>
<thead>
<tr>
<th>SERUM SAMPLES</th>
<th>SP RATIO*</th>
</tr>
</thead>
<tbody>
<tr>
<td>High antibody titer MG</td>
<td>2.156 +/- 0.023</td>
</tr>
<tr>
<td>Medium antibody titer MG</td>
<td>0.973 +/- 0.006</td>
</tr>
<tr>
<td>Low antibody titer MG</td>
<td>0.462 +/- 0.005</td>
</tr>
<tr>
<td>ProFLOK MG ELISA kit positive control</td>
<td>1.000</td>
</tr>
<tr>
<td>ProFLOK MG ELISA kit negative control</td>
<td>0.000</td>
</tr>
</tbody>
</table>

*Values are the mean +/- SEM of 30 wells (six wells/plate, five plates).

Interpreting results

When evaluating ProFLOK MG ELISA antibody results, keep in mind that the ELISA is a flock test. Flock decisions should not be made on an individual sample or a flock sample with fewer than 10 serum samples.

The ProFLOK MG ELISA kit SP ratio values and/or ELISA antibody titer values obtained for sera should be interpreted using the following value ranges:

<table>
<thead>
<tr>
<th>SP VALUE</th>
<th>ProFLOK MG ELISA ANTIBODY TITER RANGE</th>
<th>ProFLOK MG ELISA PRESUMED ANTIBODY STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 0.200</td>
<td>0</td>
<td>Negative*</td>
</tr>
<tr>
<td>0.200 to 0.599</td>
<td>149 to 743</td>
<td>Probable*</td>
</tr>
<tr>
<td>Greater or equal to 0.600</td>
<td>744 or greater</td>
<td>Positive*</td>
</tr>
</tbody>
</table>

* Negative. Serum samples with the ProFLOK MG ELISA kit SP ratio value of less than 0.200 receive a “0” antibody titer value and are presumed negative for MG antibody. However, a variety of factors, such as possible MG strain variations that may exhibit atypical biological and/or antigenic properties, prevalence of an MG strain within a flock and timing and randomness of serum sample collection procedures, could result in an MG-infected chicken flock yielding MG-negative ProFLOK MG ELISA results. It is therefore recommended that each chicken flock only be considered to be MG-negative after both: 1. Each flock has been adequately sampled and repeatedly tested several times and has yielded negative ProFLOK MG ELISA results each time; and 2. Each flock has been adequately sampled and repeatedly tested by standard conventional serologic tests (SPA and HI) and MG culture techniques and has yielded MG-negative serologic and culture results each time.

b Probable. Presumed MG antibody probable denotes the ProFLOK MG ELISA kit SP value range within which ProFLOK MG ELISA and conventional test data may suggest but may not conclusively detect MG antibody within a sample. The probable range represents a “suspect” or “gray” area in which the ProFLOK MG ELISA kit results may or may not be supported by conventional serologic (SPA and HI) test results. It is highly recommended that additional conventional serologic tests and MG culture techniques be conducted on serum and culture samples collected from the ProFLOK MG ELISA kit probable chicken flocks, as recommended in parts a and c, to confirm whether each flock is an MG-negative or MG-infected flock.

c Positive. To obtain a confirmed positive diagnosis of MG infection within a chicken flock, additional conventional SPA and HI serologic testing and culturing of samples collected from presumed ProFLOK MG ELISA antibody probable and positive chicken flocks (using standard techniques) are needed.

Kit code and contents

U.S. code: 96-6533
Europe code: AUCMG9000
Contents: 900 tests (ten 96-well plates)

References:

3 Data on file, Efficacy Study Report, February 1, 1989, Zoetis Inc.

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