Avian Mycoplasma – Industry update

NPIP General Conference Committee Meeting
June 13, 2019
Albuquerque, NM

Naola Ferguson-Noel, DVM, MAM, PhD
Current Picture

• MG
  – Low prevalence
  – High significance

• MS
  – Higher prevalence
  – Lower significance
No. of positive submissions (no vaccinated flocks)
MG 2018

Number of Detections

Commerical Poultry
Commerical Poultry
Turkey
Layer
Broiler

Number of Detections

MG-13
MG-12
MG-11
MG-10
MG-9
MG-8
MG-7
MG-6
MG-5
MG-4
MG-3
MS Control Options

- Eliminate Flock?
- Quarantine/Isolate
- Treatment
- Vaccine?
Tylosin Treatments Less Effective Over Time

A. Kiers & Ferguson-Noel, N., Unpublished (manuscript in preparation)  Naola Ferguson-Noel - Dec2017
<table>
<thead>
<tr>
<th>Genotype</th>
<th>Date Isolated</th>
<th>Company</th>
<th>MIC tylosin (μg/mL)</th>
<th>Sensitivity to tylosin</th>
<th>MIC tetracycline (μg/mL)</th>
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</tbody>
</table>

S ≤ 1 / I = 2 / R > 4
S ≤ 4 / I = 8 / R > 16

X. Gong & Ferguson-Noel, N., Unpublished (manuscript in preparation)
Mycoplasma synoviae
Antimicrobial Susceptibility Testing

- 23srRNA PCR and sequencing
Investigation of Environmental Fomites and Their Role in the Transmission of *Mycoplasma Synoviae*

Brandon T. Armwood, DVM
2018 MAM Candidate
Date
Results: Litter PCR

- Overall: 84.2%
- Litter B: 100%
- Litter C: 100%
- Litter D: 100%
- Litter E: 66.7%
- Average: 84.2%
Check Tests

• Panel of convalescent chicken sera against *M. synoviae* and *M. gallisepticum*

• Panel of tracheal swabs and purified DNA from *M. synoviae* and *M. gallisepticum* infected chickens
Antisera Check Tests

- 92 kits (63 blind, 29 known)
  - 10 MG+
  - 10 MS+
  - 10 negative

- Pass = Score of >80%
Antisera Check Tests Results

Avian Mycoplasma PDRC Check Test 2018 Results

Lab Name:  
Invoice No.

SEROLOGY (Known Kit): **PASS**  
Score = 94 %

- SPA – Charles River MS, MG (Scores = 100%)
- ELISA – IDEXX MG, MS (MG Score = 87%; MS Score = 90%)

SEROLOGY (Blind Kit): **PASS**  
Score = 91 %

- SPA – MS, MG (Scores = 100%)
- ELISA – MS, MG (MG Score = 80%; MS Score = 83%)

Comments:

- Several false positives on ELISA tests on both known and blind kits
- False positive on MG ELISA: known samples N10, MS2, MS5, MS10; and blind samples B6, B9, B16, B21 & B24
- False positive on MS ELISA: known samples MG1, MG7, MG8; and blind samples B11, B12, B13, B27, B28 & B29
Antisera Check Tests Results

Range of Scores = 87-100%

# PASS = 92 (100%)

# FAIL (≤ 80%) = 0
PCR Check Tests

• 31 Kits
  – 46 “Blind”
  – 25 “Known”

• Pass = Score of >80%
PCR Check Tests

- 5 swabs pools (5 swabs each)
  - 1 negative
  - 1 MG+
  - 1 MS+
  - 1 MG and MS+ (1 weak)

- 5 DNA samples
  - 1 negative
  - 1 MG+
  - 1 MS+
  - 1 MG and MS+ (1 weak)
PCR Check Tests

- Strong positive Ct = 20 - 27
- Weak positive Ct = 30 - 35
PCR Check Tests Results

Swabs:
Range of Scores = 90 - 100%

# PASS = 72 (100%)

# FAIL = 0
PCR Check Tests Results

DNA:
Range of Scores = 60 - 100%
# PASS = 68 (94%)
# FAIL = 3
## PCR Check Test Results

<table>
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<tr>
<th>Blind/Known Panel</th>
<th>Expected Results</th>
<th>% Participants with correct results (Mean Ct)</th>
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<tr>
<td></td>
<td>MG</td>
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<td>Swab label</td>
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<td>18-01/18-06</td>
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</table>
Thank you

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