Control Respiratory Disease in Sows for Healthier Litters

Feeding Pulmotil® to lactating sows with a history of swine respiratory disease* and its effect on the survival and performance of weaned piglets through the nursery

Investigators

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Summary

In this published trial,1 designed to evaluate the impact of sow health on weaned piglets, Pulmotil fed to lactating sows to control respiratory disease resulted in more pigs weaned, lowered mortality rates in the nursery phase and improved overall respiratory health compared to pigs from control sows.

In addition, nursery pigs from sows that received Pulmotil to control respiratory disease demonstrated substantially less pneumonia lesions in clinically healthy pigs at weaning.
**About the trial**

**Research objective**
A trial was conducted to determine the effects of Pulmotil—fed to lactating sows to control respiratory disease*—on the health and performance of piglets through the nursery phase.

**Methods**

**Trial design**
- Trial conducted from May 2005 to November 2005
- Conducted at a 2,400-head, parity-segregated gilt farrowing site in North Carolina

**Facilities**
- 2 control barns and 2 treatment barns (Table 1)
- 5 replicates per treatment

**Sow/gilt herd**
- Herd history of respiratory disease caused by multiple viruses and bacteria including *Pasteurella multocida*
- Approximately 115 total litters per week

**Table 1. Treatment groups**

<table>
<thead>
<tr>
<th>Treatment Groups</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 control barns</td>
<td>No intervention</td>
</tr>
<tr>
<td>2 Pulmotil barns</td>
<td>363g/ton for 21 days</td>
</tr>
</tbody>
</table>

**Data collection**
- Individual piglet weight was measured:
  - At weaning
  - At the end of the nursery phase
- Pigs that died of natural causes were classified in mortality group
- Cull pigs were euthanized at the end of the nursery phase

**Diagnostics**
- On 6 separate occasions, 20 clinically-healthy pigs from each group were euthanized and necropsied to survey gross pneumonia lesions
- Samples were submitted to the University of Minnesota’s Veterinary Diagnostic Laboratory. Agents identified included:

  **Bacteria**
  - *Haemophilus parasuis*
  - *Streptococcus suis*
  - *Salmonella spp.*
  - *Escherichia coli*
  - *Mycoplasma hyopneumoniae*

  **Viruses**
  - PCV 2
  - PRRSV—U.S. and European
  - SIV

**Pulmotil in sows reduces pneumonia lesions in weaned pigs**
As a result of respiratory disease control, pigs weaned from Pulmotil-fed sows (top) showed more than 3 times fewer gross pneumonia lesions than control pigs (6.9% vs. 23.2%). P<0.01^*
Results

Outcome of controlling swine respiratory disease in sows and gilts

Figure 1. Sow performance

As a result of respiratory disease control, each Pulmotil-fed sow produced an average of 5% more weaned pigs and 9.3% more pigs into the finisher than control sows.

Treatment effect
- Born NS**
- Weaned P<.01
- Into Finisher P<.01^*

Summary
- Feeding Pulmotil to control respiratory disease in lactating sows:
  - Significantly increased the number of pigs weaned per sow (Figure 1)
  - Significantly decreased mortality in the farrowing and nursery phases (Figure 2)
  - Produced numerically heavier pigs upon exit from the nursery (Figure 3)
  - Moved significantly more pounds to the finisher at the end of the nursery phase (Figure 4)

Figure 2. Mortality rate

As a result of respiratory disease control, overall losses were 22.6% lower in pigs from Pulmotil-fed sows compared to control sows.

Treatment effect
- Preweaning P<.01
- Nursery P=.10
- Culls NS**
- Overall losses P<.01^*

Figure 3. Average weight

As a result of respiratory disease control, pigs from sows fed Pulmotil were 9.8% heavier at the end of the nursery phase.

Treatment effect
- Wearing weight NS**
- Weight at nursery exit P<.14^*

Figure 4. Weight produced per sow

As a result of respiratory disease control, feeding Pulmotil to lactating sows resulted in 19.9% more pounds moved out of the nursery.

Treatment effect
- Weaning weight NS**
- Weight at nursery exit P<.05^*
### Conclusions

**CAUTION:** Federal law limits this drug to use under the professional supervision of a licensed veterinarian. Animal feed bearing or containing this veterinary feed directive drug shall be fed to animals only by or upon a lawful veterinary feed directive issued by a licensed veterinarian in the course of the veterinarian's professional practice.

Feeds containing tilmicosin must be withdrawn 7 days prior to slaughter.

The label contains complete use information, including cautions and warnings. Always read, understand and follow the label and use directions.

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**About the analysis**

- Economic analysis based on 1,000 head born
- Pulmotil cost based on 363g/ton dose for respiratory disease control in sows
- Nursery and finisher pigs receiving identical medication programs

**Assumptions:**

Nursery
- Feed cost = $0.20/lb.
- Gain valued at $0.60/lb.

A typical lactating sow consumes feed at a rate of 12 lbs. of feed for 21 days. Pulmotil cost is $48.41/ton (181g/ton) or $96.82/ton (363g/ton)

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### Table 2. Economic implications**

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Pulmotil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pigs born</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Total pigs weaned</td>
<td>815</td>
<td>855</td>
</tr>
<tr>
<td>Total pigs into finisher</td>
<td>768</td>
<td>818</td>
</tr>
<tr>
<td>Average weight at nursery exit (lbs.)</td>
<td>46.81</td>
<td>51.40</td>
</tr>
<tr>
<td>Feed intake (lbs.) per nursery pig per day</td>
<td>1.05</td>
<td>1.13</td>
</tr>
<tr>
<td>Nursery feed cost per nursery pig</td>
<td>$4.37</td>
<td>$4.71</td>
</tr>
<tr>
<td>Pulmotil cost per pig weaned</td>
<td></td>
<td>$0.69</td>
</tr>
<tr>
<td>Value of extra lbs. with Pulmotil per pig weaned</td>
<td></td>
<td>$2.75</td>
</tr>
<tr>
<td>Pulmotil advantage per pig weaned</td>
<td></td>
<td>$2.64</td>
</tr>
</tbody>
</table>

** As a result of respiratory disease control, Pulmotil has been shown to produce heavier pigs at the end of the nursery phase (see Figure 3). The swine industry generally equates 1 pound of extra gain in the nursery to about 2.2 extra pounds at market.

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### Pulmotil in-vitro minimum inhibitory concentrations (MIC)

<table>
<thead>
<tr>
<th>Microorganisms</th>
<th>MIC (μg/mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actinobacillus pleuropneumoniae</td>
<td>16</td>
</tr>
<tr>
<td>Pasteurella multocida</td>
<td>8</td>
</tr>
<tr>
<td>Mycoplasma hyopneumoniae</td>
<td>0.5</td>
</tr>
<tr>
<td>Salmonella choleraesuis</td>
<td>&gt;64</td>
</tr>
<tr>
<td>Streptococcus suis</td>
<td>&gt;64</td>
</tr>
<tr>
<td>Haemophilus parasuis</td>
<td>1</td>
</tr>
</tbody>
</table>

** Activity against these organisms has been demonstrated clinically.
** The clinical significance of this in vitro data has not been demonstrated.
* Strain type not determined.

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**Microorganisms**

- Actinobacillus pleuropneumoniae
- Pasteurella multocida
- Mycoplasma hyopneumoniae
- Salmonella choleraesuis
- Streptococcus suis
- Haemophilus parasuis

**Use**

For the control of swine respiratory disease associated with Actinobacillus pleuropneumoniae and Pasteurella multocida.

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For Pulmotil dosage 181-363 grams/ton

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Pulmotil®

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