### Study objective
A comprehensive review (meta-analysis) of seven trials was conducted in order to quantify the benefits of including Hemicell in broiler diets from day 0 to 42-43 days of age.

### Trial selection criteria
- Diets contain practical U.S. ingredients and nutrient levels
- Pen trials conducted from day 0 to 42-43 days
- Phytase used at commercial levels
- On-label use for dose and duration
- Male-only studies
- Pen weights
- Feed consumption
- Mortality data

### Materials and methods
- Seven studies met selection criteria
- Total birds: 43,800
- 0 and 100 ml/ton Hemicell applied post-pelleting (no less than 72 Mu/ton of activity)
- Duration: day 0 to 42-43 days of age
- Statistical weighting of studies based on mean squared errors

### Statistical model
- Data analysis in SAS using MIXED and GLIMMIX procedures
- Forest plots constructed to visually assess whether treatment effect was uniform across studies

### What is a meta-analysis?
A meta-analysis is a comprehensive method for systematically combining data from several studies to develop a conclusion. This conclusion is stronger than that of a single study due to the:
- Increased number of subjects
- Greater diversity among subjects
- Accumulated effects and results

This meta-analysis used a weighting procedure to account for heterogeneity in error variances for growth parameters.

### Results summary
This seven-trial comprehensive review showed that feeding Hemicell from day 0 to 42-43 days of age to break down ß-mannans (ßeta-galactomannans) in soybean meal, thus minimizing the Feed-Induced Immune Response (FIIR), resulted in improvements in three factors: market weight, feed conversion ratio (FCR) and weight-adjusted feed conversion (WAFC).1
**Conclusions**

By breaking down β-mannans to minimize the Feed-Induced Immune Response (FIIR), Hemicell fed from day 0 to 42-43 days of age resulted in:

- 2.1% (0.095 lbs.) increase in market weight
- 2.5% (4.7 points) improvement in FCR
- 3.2% (6.2 points) improvement in WAFC

This comprehensive review indicates that choosing not to address the Feed-Induced Immune Response (FIIR) from β-mannans in soybean meal results in quantifiable performance costs.

**Hemicell use recommendations**

Hemicell is a unique, patented enzyme produced by fermentation of *Bacillus licheniformis* bacteria. The active ingredient is Endo-1,4-β-D-mannanase.

**Species:** Broilers, Layers, Turkeys

**When:** Use Hemicell in diets containing 12% SBM or higher

**Recommended dose:**

<table>
<thead>
<tr>
<th>Product (form)</th>
<th>Dosage per ton of complete feed</th>
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<tr>
<td>Hemicell (liquid)</td>
<td>100 mL enzyme with 0.90 L water</td>
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**Energy reduction (for high-energy diets):** Improved performance allows for a reduction in dietary energy up to 40 kcals/lb.

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


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