



Evaluation of the effects of varying doses of Hemicell[®] HT

A comprehensive review of 11 studies

Study objective

A comprehensive review (meta-analysis) of 11 trials was conducted in order to quantify the benefits of including Hemicell HT at varying levels in broiler diets from day 0 to 42-43 days of age in order to determine optimum dose.

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

- 11 studies met selection criteria
- Total birds: 97,760
- Varying levels (0 to 0.80 lbs./ton) of Hemicell HT applied in the mixer
- 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
- Regression plots constructed to visually assess correlation between benefit and level of Hemicell HT dose
- Difference deemed significant if $p < 0.05$

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

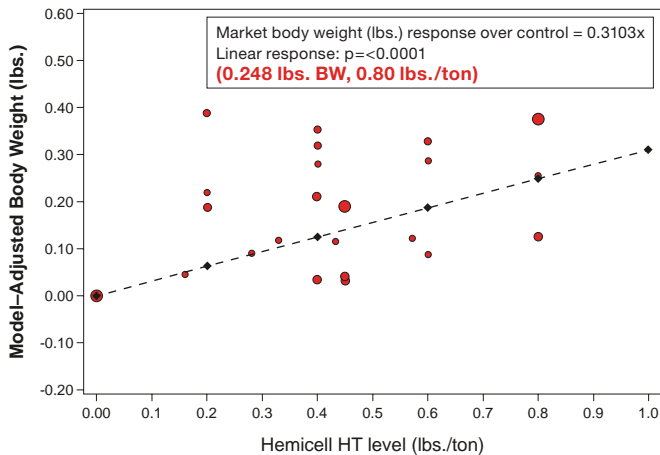
This meta-analysis used a weighting procedure to account for heterogeneity in error variances for growth parameters.

Results summary

Results of this 11-trial comprehensive review demonstrated that by breaking down β -mannans (beta-galactomannans), thus minimizing the Feed-Induced Immune Response (FIIR), Hemicell HT fed birds at the recommended dose (0.80 lbs./ton)¹ saw an increase in body weight, improved feed conversion ratio and improved weight-adjusted feed conversion.

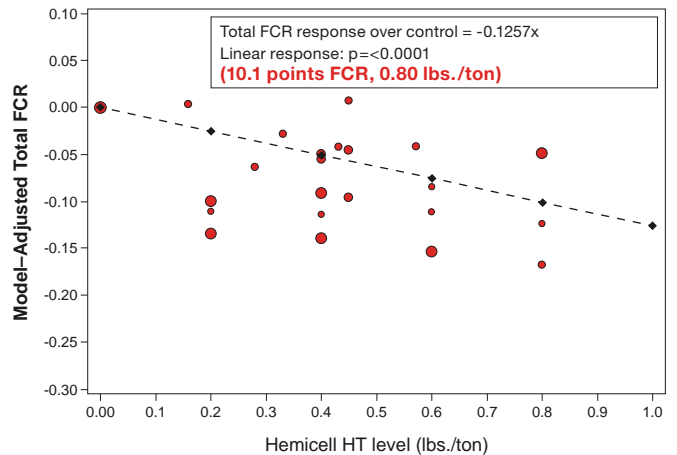
Hemicell® comprehensive review results

Market body weight (lbs.)



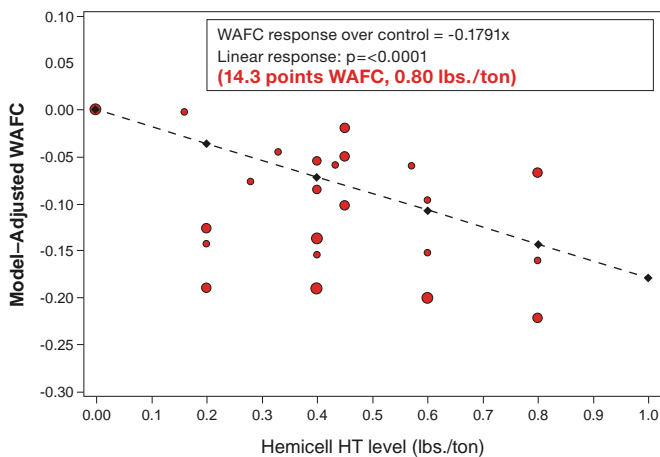
By breaking down β -mannans, Hemicell HT fed birds at the recommended dose of 0.80 lbs./ton¹ saw an improved weight gain of **0.248 lbs.**

Feed conversion ratio (FCR)



By breaking down β -mannans, Hemicell HT fed birds at the recommended dose of 0.80 lbs./ton¹ saw a feed conversion ratio of **10.1 points**.

Weight-adjusted feed conversion (W AFC)*



By breaking down β -mannans, Hemicell HT fed birds at the recommended dose of 0.80 lbs./ton¹ showed that W AFC reached **14.3 points**.

*Adjusted to 5 lbs. common body weight

Conclusions

By breaking down β -mannans to minimize the Feed-Induced Immune Response, Hemicell HT fed birds at the recommended dose of 0.80 lbs./ton resulted in:

- **Increased body weight (0.248 lbs.)**
- **Improved FCR (10.1 points)**
- **Improved W AFC (14.3 points)**

This comprehensive review supports the use of Hemicell HT at its recommended dose of 0.80 lbs./ton to achieve performance results. Further, these demonstrated improvements indicate 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 lentus* 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:

Product (form)	Dosage per ton of complete feed
Hemicell HT (dry)	0.80 lbs.

Energy reduction (for high-energy diets): Improved performance allows for a reduction of dietary energy up to **40 kcal/lb.**

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

¹ Elanco Animal Health 2014. "Hemicell Broiler Meta-Analysis." Elanco Study Number ENZUS130029. Data on file.

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