RESEARCH SUMMARY

Evaluating the in vitro *efficacy of FeedARMOR™ against* Salmonella *Typhimurium.*

FEEDARMOR™

BACKGROUND

Salmonella is a highly contagious bacterial pathogen often found in animal feed that causes enteric disease in livestock and poses a significant risk to human health. Dr. Janghan Choi established an *in vitro* model to test antimicrobial activity of feed mitigants against *Salmonella* Typhimurium. In this model, minimum inhibitory concentration (MIC) of tested feed mitigant are determined using microdilution methods, and bacterial counts of *Salmonella* Typhimurium are quantified at its sub-MIC concentration.

FeedARMOR was evaluated using this *in vitro* system to investigate its antimicrobial activity against *Salmonella* Typhimurium.

EXPERIMENTAL DESIGN[1]

- Trials were conducted, and data were generated by the JC Laboratory, Department of Animal and Food Sciences, Texas Tech University
- This was an *in vitro* experiment in which a standardized bacterial inoculum (5×10^5 CFU/mL) was added to the test solution, followed by different concentrations of FeedARMOR
- Minimum inhibitory concentration (MIC) was determined by microdilution against *Salmonella* Typhimurium using OD_{600} measurements and bacterial counts
- Minimum bactericidal concentration (MBC) was determined using an agar plating method
- Bacterial growth at sub-MIC levels was evaluated

TREATMENTS

1. Control: 5×10^5 CFU/mL of *Salmonella* Typhimurium without FeedARMOR
2. Control + FeedARMOR (0.5 mg/mL)
3. Control + FeedARMOR (1.0 mg/mL)
4. Control + FeedARMOR (1.5 mg/mL)
5. Control + FeedARMOR (2.0 mg/mL)
6. Control + FeedARMOR (2.5 mg/mL)
7. Control + FeedARMOR (3.0 mg/mL)
8. Control + FeedARMOR (3.5 mg/mL)
9. Control + FeedARMOR (4.0 mg/mL)
10. Control + FeedARMOR (4.5 mg/mL)
11. Control + FeedARMOR (5.0 mg/mL)

FIGURE 1.

Minimum inhibitory concentration (MIC) determination (N = 3).

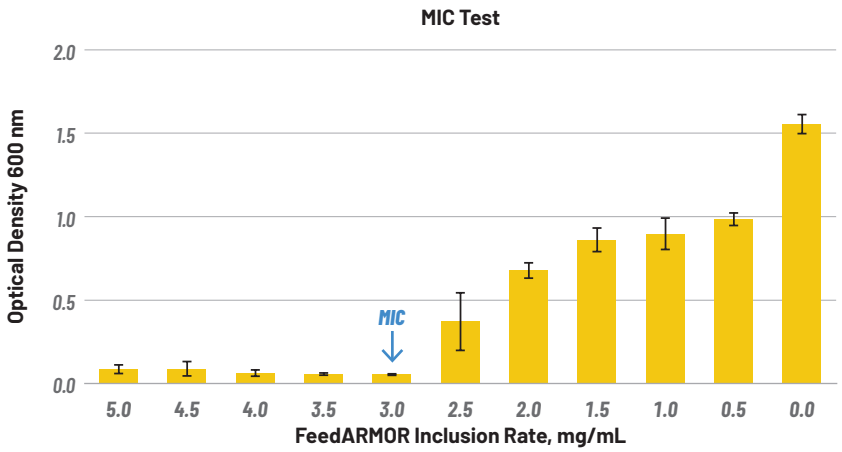

FIGURE 2.

Salmonella Typhimurium count at sub-MIC levels (N = 3).

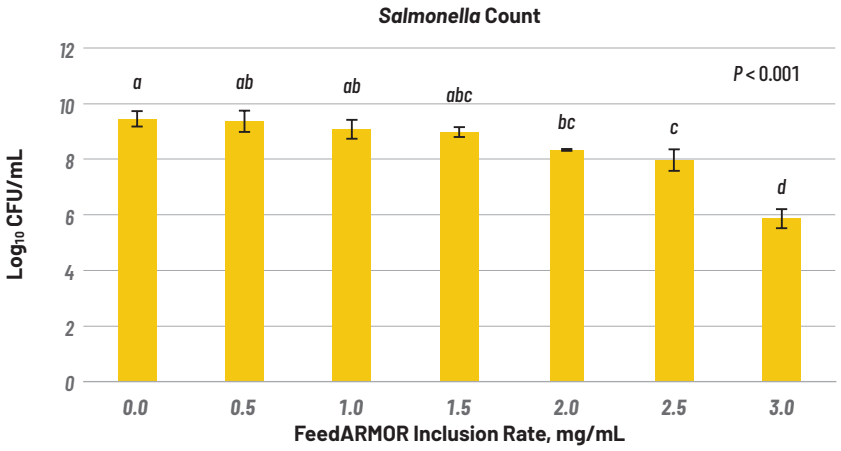

TABLE 1.

Minimum bactericidal concentration (MBC) determination (N = 3).

FEEDARMOR INCLUSION RATE, MG/ML	*GROWTH OF BACTERIA*
3.0 (MIC*)	Detect
3.5	Detect
4.0 (MBC**)	No Detect
4.5	No Detect
5.0	No Detect

*Minimum inhibitory concentration (MIC): the lowest concentration of FeedARMOR that visibly inhibits bacterial growth

**Minimum bactericidal concentration (MBC): the lowest concentration of FeedARMOR that results in no detectable viable bacteria

RESEARCH SUMMARY

FeedARMOR exhibits strong antimicrobial activity against a major bacterial contaminant in animal feed, *Salmonella* Typhimurium

- Minimum inhibitory concentration (MIC, 3.0 mg/mL FeedARMOR): inhibited growth of *Salmonella* Typhimurium, achieving a 3 $\log_{10}$ (≈99.9%) reduction in bacterial counts
- Minimum bactericidal concentration (MBC, 4.0 mg/mL FeedARMOR): no viable *Salmonella* detected
- These results suggest that FeedARMOR may effectively reduce or eliminate *Salmonella* Typhimurium contamination in animal feed

— ADDITIONAL FeedARMOR TRIAL DATA AVAILABLE UPON REQUEST —

FEEDARMOR™

[1] Furst-McNess Company. Data on file.

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