Research Notes

Arm & Hammer Animal and Food Production

Finalyse SAL bacteriophage effectively reduced *Salmonella* in ground turkey as part of a multi-hurdle food safety approach in a commercial validation.

STUDY OVERVIEW

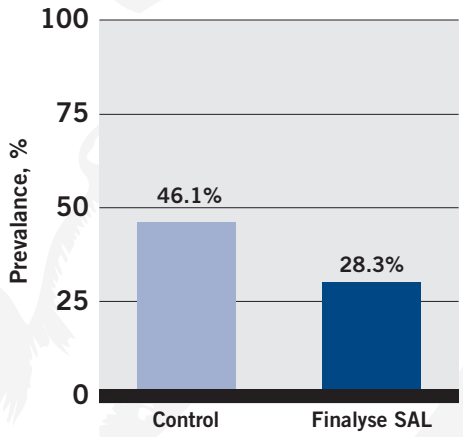
A long-term paired validation study[1] was conducted to determine the antimicrobial efficacy of treating drums with Finalyse™ SAL following a PAA dip for reducing *Salmonella* prevalence in ground turkey.

Batches of bone-in drums from the same flock were dipped in 500ppm PAA (30 sec) and then separated into a control batch (PAA only) and a treated batch that was dipped in a 10^7 pfu/mL Finalyse SAL solution (30 sec). Both control and treated drums were shipped to the grinding plant and ground separately (~ 12–24 hr post-treatment) prior to *Salmonella* sampling and analysis.

Over a one-month period, this process was repeated for a total of 18 batches and samples were collected from 10 random trays for each of the treatment groups within a batch (n=360).

The efficacy of Finalyse SAL for reducing the prevalence of *Salmonella* was evaluated using a mixed effects probit model to test for a significant impact on prevalence. The large amount of day-to-day variation in the positive rates for the two treatment groups necessitated a more advanced model for isolating the expected impact of Finalyse SAL on prevalence rates.

FIGURE 1: *Salmonella* prevalence.



RESULTS

Treating drums with Finalyse SAL resulted in a significantly (P<0.01) lower *Salmonella* prevalence (38.6%) in ground turkey when compared to the control (46.1% vs 28.3%) (Fig. 1).

In addition, this model can be used to estimate the expected changes in *Salmonella* prevalence in ground turkey (Table 1) based on the prevalence rate for ground samples with PAA only (Control).

TABLE 1 Expected prevalence and difference based on control prevalence (%).

Control (PAA only)	10.0	25.0	50.0	75.0
Finalyse SAL after PAA*	1.1	4.6	15.6	36.8
Expected Difference 95% CI	**8.9 (7.0 – 9.7)**	**20.4 (14.9 – 23.2)**	**34.4 (22.7 – 42.2)**	**38.2 (22.2 – 52.3)**

*Model derived estimates.

CONCLUSIONS

- Finalyse™ SAL, when used as a dip for bone-in drums, significantly reduced *Salmonella* prevalence in ground turkey samples.
- Finalyse SAL can be an effective antimicrobial intervention in reducing *Salmonella* in ground turkey when used as part of a multi-hurdle, multi-technology food safety approach.

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1 ARM & HAMMER. Study report and data on file. 2019.

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