EFFECT OF L28 SUPPLEMENTATION AS DIRECT FED MICROBIAL ON BEEF CATTLE PATHOGEN SHEDDING AND INDICATOR MICROORGANISM PRESENCE

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I. OBJECTIVES

The objective of the study was to determine the effect of dietary L28 and tylosin on *Salmonella*, *Enterococci*, generic *Escherichia coli*, and *E. coli* O157 presence in fecal grabs, perineal and hide swabs, and subiliac lymph node samples.

II. MATERIALS AND METHODS

Five supplementation treatments were used as follows: negative control with no additives, monensin and tylosin (MONTY), monensin and L28 (MONPRO), L28 by itself, and tylosin by itself. These 5 treatments had 12 pens assigned for each for a total of 60 pens. Fecal grab samplings were done at day 0, 100, and 200 of feed, totaling 180 samples. A completely randomized block design was used with pens as the experimental units and blocks of body weight. The individual and combined effects of tylosin and L28 were studied. Hides and perineal swabs were taken at final day of feed prior to shipping to harvesting plant. Subiliac lymph nodes were excised after harvest to analyze *Salmonella* presence. Generic *E. coli*, *Enterococci*, *Salmonella*, and *E. coli* O157 presence were evaluated. A chi-squared analysis was used to compare microbial presence difference between treatments using an alpha level of 0.05.

III. RESULTS

Generic *E. coli* and *Enterococci* presence was high throughout the study, 98.3% and 90.5%, respectively, as expected. *Salmonella* presence was substantially high (62.7%) within pens and similar among treatments. No effects ($P > 0.152$) among treatment on microbial presence was observed in any of the 4 microorganisms studied within the pen, and perineal samples taken. However, *Salmonella* presence within lymph nodes was affected by the treatments ($P < 0.001$). The MONPRO treatment (34.8%, 26/46) had greater presence of *Salmonella* than the MONTY (8.7%, 4/46) and the L28-alone treatment (0.0%, 0/42). The presence of *Salmonella* on hide samples was affected ($P = 0.047$), where MONPRO treatment (23.9%, 11/46) had the greatest presence compared to control (4.4%, 2/45) and tylosin-alone treatment (6.7%, 3/45).

IV. CONCLUSION

Incidence of *Salmonella*, *Enterococci*, generic *E. coli*, and O157 did not increase with supplementation of L28 compared to the control. Greater presence of *Salmonella* in MONPRO treatment on lymph nodes and hides suggests that monensin may have an antagonistic effect with the probiotic when supplemented at the same time through the diet, and it needs to be further studied. Absence of *Salmonella* in L28 treatment lymph nodes suggests that supplementation of L28 may contribute to mitigating *Salmonella*'s capacity to invade the lymphatic system. This poses a significant contribution to the beef industry as lymph nodes can be a substantial source of *Salmonella* in ground beef.

Keywords: direct fed microbial, *Lactobacillus* salivarus L28, pathogen shedding