

The Effect of Probiotics on the Incidence of *Salmonella* in Commercial Broilers

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Food-borne illness is a worldwide public health concern and epidemiological evidence has identified poultry and poultry products as significant sources of human *Salmonella* infection. Therefore, the reduction or elimination of this organism in commercial poultry flocks should greatly reduce the incidence of human infection. The objective of this study was to determine the effect of probiotics on *Salmonella* colonization and invasion. In two separate trials, broiler chicks were randomly allocated on day-of-hatch into floor pens (n = 40 chicks/pen) and orally gavaged with 0.25mL of either 0.9% sterile saline (NC), 10^9 - 10^{10} cfu/chick of a commercially available probiotic culture (PROB) or 10^9 - 10^{10} cfu/chick of a laboratory strain of *Salmonella enteritidis* (SE1 or SE2). Chicks that initially received PROB were orally gavaged 1 hr later with 10^9 - 10^{10} cfu/chick of SE1 or SE2 while chicks that initially received SE1 or SE2 were orally gavaged 1 hr later with 10^9 - 10^{10} cfu/chick of PROB. On d 7, 14, 21 and 28, ten birds from each treatment group were euthanatized and their liver, spleen and cecal tonsils were aseptically removed for the determination of SE colonization and invasion. Colonization and invasion data were analyzed using the PROC MIXED procedure of SAS. Values of $P \leq 0.05$ were considered statistically significant. There were no differences in the incidence of *Salmonella* in birds challenged with SE1, regardless of the administration of PROB. However, in birds challenged with SE2, there were significant differences in *Salmonella* colonization and invasion ($P < 0.05$). Overall, the SE strain had a greater influence on the incidence of *Salmonella* compared to the probiotic in this study.