

Comparison of the Effects of Probiotic, Organic Acid and Medicinal Plant on *Campylobacter jejuni* Challenged Broiler Chickens

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ABSTRACT

Campylobacter is known to be one of the most common causes of human intestinal disorders. Since poultry are known to be the main reservoirs for this pathogen, decreasing this bacterium in intestinal tract could be beneficial in reducing contamination of poultry products. The effects of probiotic (PrimaLac[®]), medicinal plant (Sangrovit[®]) and organic acid (Selko-pH[®]) as broiler feed additives on cecal colonization, and fecal excretion of broilers were studied. Other parameters such as performance, immune response and intestinal morphology were also determined. A total of 300 broiler chicks (Cobb 500) were divided into 5 groups. Groups consisted of unsupplemented feed (negative and positive controls), probiotic, medicinal plant and drinking water containing organic acid mixture. Except for the negative control group, all chickens were orally challenged with (10^9 cfu mL⁻¹) *Campylobacter jejuni* at day 21. Cecal and fecal samples were collected for *Campylobacter* count. Body weight (BW), feed intake (FI) and feed conversion ratio (FCR) were determined weekly and cumulatively. BW and FI in the probiotic treated group were higher ($P < 0.05$) than the positive control group. On day 49 all supplemented treatments showed a reduction of *Campylobacter* colonization in cecal contents ($P < 0.05$). Fecal samples showed reductions ($P < 0.05$) on day 35 and 42. Villi height of duodenum and jejunum in the probiotic and medicinal plant treated groups were improved ($P < 0.05$). Immune response was significantly higher in these two groups ($P < 0.05$). These effects could be due to the antibacterial effects of the used feed supplements. Our results indicate that these feed additives could be potential treatments for reducing *Campylobacter* in the intestine of broilers. Probiotic and medicinal plant improve growth performance of these birds.

Keywords: Broiler, *Campylobacter*, Herbs, Organic acids, Probiotic[®].

INTRODUCTION

Campylobacter jejuni is known to be the leading cause of acute human bacterial intestine infection both in the western and developing countries (Anonymous, 2008). Poultry can easily colonize *Campylobacter* spp. in their intestinal tract and are known to be the main reservoirs for these bacteria. The use of antibiotics as feed additive is

under discussion in regard to human food safety because of the potential development of antibiotic resistant bacteria. Antibiotic resistant strains of *C. jejuni* and *C. coli* from broilers have also been discovered (Jorgensen *et al.*, 2002). Therefore, there is an urgent demand to search for alternative strategies to control *Campylobacter* both in humans and chickens. Because of the vast number of pathogens in feces, leaking

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