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Efficacy of *Bacillus subtilis* probiotic on growth performance, fecal microbiota and intestinal morphology of broiler chickens

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The study evaluated the effects of feeding probiotic (*Bacillus subtilis*; BS) or antibiotic growth promoter (AGP) alone or in combination on growth performance and intestinal morphology of broilers. A total of 480 day-old male Cobb-400 broilers were grouped into 4 treatments and fed different diets: (1) corn-soybean meal based control (C), (2) C+AGP (100 ppm of oxytetracycline and neomycin), (3) C+BS (500g/MT) and (4) C+BS+AGP. At day 42, feeding BS or AGP alone numerically improved body weight gain (BWG, by 40 and 60 g, respectively) of broilers compared with control whereas feeding both BS and AGP resulted in higher BWG (by 90 g) relative to control indicating a synergistic effect. Feed conversion ratio improved ($P \leq 0.05$) when broilers were fed BS (by 9 points), or BS+AGP (by 10 points) diets compared with C diet. Significant increase in duodenal villus height (VH) was observed when broilers were fed BS or AGP alone compared with those fed C diet. Feeding BS or BS+AGP diet increased ($P \leq 0.05$) the VH of jejunum and ileum compared with C diet, whereas VH was reduced in ileum of broilers fed AGP diet. Furthermore, there was a significant increase in fecal lactic acid bacteria (LAB) and decrease ($P < 0.05$) in *Enterobacteriaceae* (ENT) counts in broilers fed BS compared to control. A combined effect of feeding AGP and BS was observed as indicated by highest LAB counts. It can be concluded that inclusion of BS based probiotic alone or in combination with AGP to broiler diets improved growth performance and small intestinal morphology. Supplementation of BS showed its effects on modulating microbial populations, which was evidenced by increased amounts of LAB, mostly accounting for beneficial gut microbiota and reduced counts of ENT, the latter group containing gut pathogenic bacteria like *Escherichia coli* and *Salmonella*.

Biography

Kiran Doranalli holds a Doctor of Veterinary Medicine and Master Degree in Animal Nutrition from University of Agricultural Sciences, Veterinary College, Bangalore, India. He completed his PhD program from University of Saskatchewan, Department of Animal and Poultry Science, Canada. He has published 12 scientific research articles in peer reviewed journals and 4 popular press articles, presented and published 27 abstracts in scientific meetings and conferences. Currently, he is working with Evonik industries as the Regional Technical Manager for Asia south region from the past 3 years.

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