

Abstract

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Effects of *Bacillus subtilis* C-3102 (CALSPORIN®) with growth promoting antibiotics on live performance of broiler chickens.

T. Hamaoka^{*1}, B. Y. Lee¹, M. D. Sims^{*2}, D. M. Hooge^{*3} and N. Otomo¹

¹Calpis USA, Inc., Mt. Prospect, IL, USA, ²Virginia Diversified Research Corp., Harrisonburg, VA, and ³Hooge Consulting Service, Inc., Eagle Mountain, UT.

Bacillus subtilis C-3102 (BSC) is utilized in a direct-fed microbial product CALSPORIN®. The BSC has been used to improve production performance in broilers since 1986. To investigate the effect of using BSC with growth promoting antibiotics (AGP), a 42-d trial was conducted. A 2X3 factorial arrangement with 6 dietary treatments was used (BSC levels, 0 or 3x10⁵ CFU/g, and 3 AGP treatments.) Virginiamycin (VM) and Bacitracin Methylene Disalicylate (BMD®) were used as AGP. The 3 AGP treatments were: 1) no antibiotics (NA); 2) VM 20 g/ton (V); 3) BMD® 50g/ton from 0 to 7 d, BMD® 25g/ton from 8 to 35 d, then VM 20 g/ton from 36 to 42 days (BD/VM). There were 20 replicate pens with 30 Cobb 500 chicks each per treatment. The BW and feed conversion ratios (FCR) were measured at day 21, 35 and 42. Fecal samples were collected from all pens at the end of the trial for microbial profiling. All data were analyzed by SAS/STAT using GLM procedure and Tukey's HSD test to separate means. Significant improvement ($p<0.05$) of FCR by BSC was observed through the trial period as a main effect. Cross effect of BSC and AGP was confirmed ($p<0.05$) and BSC with V or BD/VM programs each showed better FCR compared with other groups during the trial period. The V program showed best performance for body weight gain ($p<0.01$) compared with other programs. The number of Enterobacteriaceae was increased significantly ($p<0.05$) in the AGP treatment groups, and the BSC with NA program group showed a lower number of Enterobacteriaceae than AGP supplemented groups ($p<0.05$). The total number of anaerobic bacteria was significantly decreased ($p<0.05$) by BSC and by AGP. It was concluded from this study that BSC improved FCR in the presence of VM or BMD® and BSC may potentially contribute to reducing the feed expense portion of broiler production cost.

Key Words: *Bacillus subtilis* C-3102, broiler, CALSPORIN, direct-fed microbial, AGP

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