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Effect of probiotic microbial culture from maize steep in drinking water of broiler chickens

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Abstract

Effects of probiotic microbial culture isolated from the steep of fermented maize mash on broiler performance, nutrient retention, blood profile, gut microbial profile and carcass characteristics were assessed in a 42-day trial. Drinking water with none or any of three microorganisms isolated from maize steep and included singly or in combinations to give eight treatment groups; Control (C), *Lactobacillus fermentum* (L), *Bacillus subtilis* (B), *Saccharomyces cerevisiae* (S), *Lactobacillus fermentum* and *Bacillus subtilis* (LB), *Lactobacillus fermentum* and *Saccharomyces cerevisiae* (LS), *Bacillus subtilis* and *Saccharomyces cerevisiae* (BS), *Lactobacillus fermentum*, *Bacillus subtilis* and *Saccharomyces cerevisiae* (LBS) were administered to 192 day-old broiler chicks in a Completely Randomised Design. The treatments had 3 replicates with 8 birds each. Daily / weekly data were collected from the birds on performance parameters. Experimental diets and excreta droppings were analysed for their chemical constituents and at 42nd day, samples were collected for blood, gut microbial analyses and carcass evaluation.

Average daily feed intake values were significantly ($p < 0.05$) higher for birds on experimental treatments with inclusion of various combinations of microbial culture (LS – 73.14 g bird⁻¹ day⁻¹, LBS – 72.40 g bird⁻¹ day⁻¹, LB – 72.23 g bird⁻¹ day⁻¹ and BS – 72.02 g bird⁻¹ day⁻¹) compared to birds administered drinking water with inclusion of single microbial culture and control groups (L, B, S and C). Only total protein of all biochemical indices assessed was significantly ($p < 0.05$) influenced with the highest value (36.00 g l⁻¹) observed in birds on LB. The experimental treatments significantly ($p < 0.05$) influenced the birds RBC, MCH and MCV. The RBC of broilers on the experimental treatments were highest compared to those on the control treatment. The MCH and MCV for birds on S were significantly ($p < 0.05$) lowest compared to the values obtained in other treatment groups. There was significant ($p < 0.05$) effect of treatment groups on wing yield. The yield in groups LB (8.44%), L (8.33%), LS (8.25%) and LBS (8.13%) were higher ($p < 0.05$) than other treatment groups but similar to control group. In conclusion, there was no adverse effect of the probiotic microbial culture on broiler chickens.

Keywords: Broilers, drinking water, maize steep, microbial culture, probiotic