



Graduate management
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**Evaluation of nutritional value and the use of dried corn steep liquor
powder and probiotics in the diet of broiler chickens**

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Abstract

The aim of this study was to investigate the nutritional value of dried corn steep liquor (DCSL) and the effect of its different levels along with lacto-feed probiotic on performance, blood parameters, meat quality, intestinal microbial population and humoral immune response of broiler chickens. 320 one-day-old Ras 308 broilers were used in an experiment with a 2x4 factorial arrangement with four levels of DCSL (zero, two, four and six percent) and two levels of lacto-feed probiotics (zero and 150 mg per kg) in a completely randomized design with eight treatments, four replications and 10 birds per replication for 42 days. First, the amounts of energy, protein, amino acids and mineral salts of corn syrup were determined. Then, the effect of DCSL and probiotics on weight gain, feed intake, feed conversion ratio, carcass components, lactic acid and coliform bacteria population, the response of the humoral immune system of broiler chickens against Newcastle disease, bronchitis and influenza viruses, meat quality and blood parameters were measured. Metabolizable energy and crude protein of DCSL were measured as 2753 kcal/kg and 45.69%, respectively. In the grower, finisher, and whole periods, the probiotic effect of lacto-feed and DCSL and their interaction effect were not significant on body weight gain and feed conversion ratio. In the starter period, the birds that were fed with diets containing 4% DCSL had higher feed intake and body weight gain than birds fed with diets without DCSL ($P < 0.05$). The interaction effect of 6% level of DCSL and probiotic increased feed intake compared to the diet without these compounds in the starter period ($P < 0.05$). At the level of 6% DCSL, the relative weight of gizzard decreased significantly compared to other treatments ($P < 0.05$). The use of probiotics in the diet also increased the spleen weight ($P < 0.05$). The highest level of antibody against Newcastle virus, influenza and bronchitis was observed at the level of 6% DCSL ($P < 0.05$). The interaction of DCSL and probiotics decreased the population of coliforms and increased the population of lactic acid bacteria ($P < 0.05$). The lowest amount of malondialdehyde and peroxide was related to broilers receiving 6% level of DCSL and lacto-feed probiotic alone during seven days of storage ($P < 0.05$). Also, the level of 6% DCSL and probiotic 150 mg/kg in the diet of broiler chickens caused a significant increase in the tenderness, juiciness and color of the meat. The level of 6% DCSL in the diet of broiler chickens caused a significant decrease in uric acid concentration ($P < 0.05$). Also, the addition of probiotics in the diet caused a significant increase in blood cholesterol levels ($P < 0.05$). But the concentration of other blood indices was not affected by the diet. In addition, the level of 6% DCSL in the diet caused a significant decrease in the level of alkaline phosphatase enzyme compared to the level of 0% ($P < 0.05$). According to the results of this study, the use of DCSL and probiotics in the diet of broilers improves the humoral immune response, the population of beneficial intestinal bacteria and the meat quality.

Key word: Humoral immunity, diet, appetite