



Abstract

The study was conducted in order to evaluate the effects of probiotic (*Bacillus licheniformis*) on the growth performance and immune competence of the broiler birds. The probiotic, obtained from the culture bank of Institute of Industrial Biotechnology GCU Lahore, was tested for its ability to withstand harsh environmental conditions, for which some physiological tests like bile salt, acidic pH and thermo-tolerance were performed. Probiotic was tested for its antimicrobial activity for which the disk diffusion assay was performed against the poultry pathogen, *Micrococcus luteus*. Bacterial biomass was then generated in large amount, under optimized conditions, using shake flask technique which was centrifuged and later on lyophilized to obtain dry cell mass. The product was then supplemented in a poultry trial to evaluate its effects on the overall growth of broiler chicks. Forty-eight one day old boiler chicks were randomly assigned to three groups with two replicates each. Groups included in the trial were control, antibiotic (20 mg/kg of antibiotic tyloxin in basal diet) and probiotic (1 g/kg of *Bacillus licheniformis* in basal diet). The trial was conducted for the period of 5 week and growth performance, slaughtering characteristics, hematological, histological and immunological parameters were evaluated. After the trial was concluded the body weight of chicks in control antibiotic and probiotic was 1933.21 ± 30.37 , 2100.58 ± 29.13 , 2342.74 ± 33.5 ; average body weight gain 1899.31 ± 58.7 , 2065.14 ± 50.1 , 2296.61 ± 55.3 ; total feed intake 4072.44 ± 8.19 , 3896.40 ± 12.49 , 3711.79 ± 12.1 and feed conversion ratio 2.14 ± 0.05 , 1.88 ± 0.02 , 1.65 ± 0.04 respectively. After the conclusion of trial the birds were slaughtered and further parameters were evaluated. Chicks supplemented with probiotics showed an increase in weight of pancreas, heart, liver and intestine in comparison to control and antibiotic. Blood parameters (RBC, WBC, hemoglobin) and villus height to crypt depth ratio were also improved. Cholesterol level was found to be lower in birds supplemented with probiotics (170.12 ± 2.12) in comparison to antibiotic (184.65 ± 1.95) and control (193.47 ± 2.43) while the antibody titre was found to be the highest (6.52 ± 0.39). So based on results the study indicates that *Bacillus licheniformis* can improve the growth, hemotological, histological and immunological performances of the broiler birds and therefore can be employed as an alternative growth promoter to antibiotics.
