Abstract:

In order to investigate the effect of adding five levels of *Ferula gummosa* root powder (0, 0.25, 0.50, 0.75 and 1 percent) in diet on performance and immune system of straight-run Ross-308 broilers, this experiment was conducted in a completely randomized design with 5 treatments, 4 replicates and 10 chicks in each replicate from 1 to 42 days of age. Effect of different levels of *Ferula gummosa* root powder on weight gain, feed intake and feed conversion ratio were not significant ($P > 0.05$). The weight of intestine in birds fed 1 percent *Ferula gumosa* was higher than control ($P < 0.05$). Effect of treatments on relative weight of carcass, breast, liver, proventriculus, gizzard, and length of duodenum, jejunum and ileum was not significant ($P < 0.05$). Heart weight in birds fed 0.25 *Ferula gumosa* was higher than 0.50 treatment ($P < 0.05$). Relative weight of intestine showed an increasing trend. Effect of adding *Ferula gumosa* root powder on relative weight of proventriculus and jejunum and ileum length was not significant ($P > 0.05$). Birds fed 0.75% *Ferula gumosa* had the highest amount of serum total protein and albumin. The highest serum cholesterol level was seen in 1 and 0.75 % *Ferula gumosa* treatments ($P <0.05$). The highest albumin to globulin ratio was seen in 0.25% *Ferula gumosa* treatment ($P <0.05$). The highest antibody titer against sheep red blood cells was seen in birds fed 0.50% *Ferula gumosa* while the highest antibody titer against Newcastle and bronchit virus were seen in 0.75% *Ferula gumosa* ($P <0.05$). The highest cellular immunity response after 24 h post challenging with dinitrocholorobenzen was seen in birds fed 0.75% *Ferula gumosa* ($P <0.05$). Effect of different dietary treatments on relative weights of spleen and bursa of Fabricius were not significant ($P >0.05$). *Ferula gumosa* root powder reduced ileum *Escherichia coli* while increased lactic acid bacteria population ($P <0.05$). Result of current study shows that use of 0.75% *Ferula gumosa* root powder in diet of broilers has positive effect on blood metabolites, humoral and cellular immunity and ilial lactic acid bacteria population.

Keywords: *Ferula gumosa*, Performance, Immune system, Microbial population

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Effects of different levels of qalbanum (*Ferula gummosa)* root powder on performance, immune response, intestinal microbiology and biochemical parameters of broiler chickens

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