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Influence of dietary supplementation of sodium diformate on the immune status of broilers in environmentally controlled housing system

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Abstract
A biological experiment was conducted to find out the influence of dietary supplementation of Sodium diformate (NDF) at 0, 0.05, 0.10, 0.15 and 0.20 percent level and ox tetracycline at 0.02 percent level on the intestinal his to-morphology of commercial broilers in environmentally controlled housing system. The result of the experiment revealed that dietary inclusion of sodium diformate had significant influence on the intestinal villi length of broilers reared in environmentally controlled housing system.
Formic acid and their salts are well known to improve productivity by acting against pathogens, decrease pressure on the bird's immune system, which makes more nutrients available for productive functions such as growth. The double sodium salt of formic acid, having the same antimicrobial properties of formic acid reduces the impact of pathogenic bacteria in the gut of broilers and thereby improved the production performance.

Keywords: villi length, broilers, sodium diformate, environmentally controlled housing

Introduction
A biological experiment was conducted by using 300 day old, sex separated commercial broiler chicks belonging to single hatch. These chicks were randomly grouped into 6 treatments with 5 replicates of 10 chicks in each. All the birds were reared under standard management practices in an environmentally controlled house up to five weeks of age. Totally six experimental diets were prepared by adding sodium diformate (NDF) at 0, 0.05, 0.10, 0.15, and 0.20 percent level and ox tetracycline at 0.02 percent level in the basal broiler diet and fed to the broilers up to the end of the fifth week of experimental period. At the end of the study period (fifth week of age), two birds (one male and one female) from each replicate of the treatment group were randomly picked up and slaughtered. The intestine samples taken from duodenum portion were preserved in ten percent buffered formalin for histological studies.

Materials and Methods
The collected blood samples were placed in a slanting position and were allowed to clot and then they were centrifuged for 20 minutes at 2500 rpm to separate the sera. The sera samples were stored at -20 ^{o}C. The stored sera were used to detect the antibody titre against Ranked disease by Haemagglutination inhibition test (Alexander, 1998) [1].

Result and Discussion
The mean (± S.E.) antibody titre against Ranikhet disease of the broilers at five weeks of age as influenced by different levels of dietary sodium diformate are presented in Table 1.
The analysis of variance of data revealed that at five weeks of age, there was a significant difference observed between the treatment groups due to supplementation of both sodium diformate and ox tetracycline. Group T_5 recorded significantly higher antibody titre (4.14) followed by T_6 (3.71) and T_4 (3.43). The groups T_1, T_2 and T_3 recorded significantly lower antibody titre value (2.43-2.71).
Similar to the findings of this study, Houshmand *et al*. (2012) and Eze *et al*. (2014) reported that organic acids enhanced the antibody titre against Ranikhet disease in broilers.

Conclusion

It is concluded that dietary supplementation of sodium diformate at 0.15 percent and above had significantly improved the antibody titre against Ranikhet disease in broilers.

Table 1: Mean (± S. E.) antibody titre against Ranikhet disease (log_2 value) of broilers at five weeks of age as influenced by different levels of dietary sodium diformate

Treatment	Haemagglutination inhibition test
T_1	$2.71^{b} \pm 0.52$
T_2	$2.71^{b} \pm 0.36$
T_3	$2.43^{b} \pm 0.30$
T_4	$3.43^{ab} \pm 0.53$
T_5	$4.14^{a} \pm 0.14$
T_6	$3.71^{ab} \pm 0.52$

References

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