

Effect of prebiotic and/ or antibacterial drug on performance of broiler infected with *E.coli*

*¹M.M. Amer,² Kh.M.Elbayoumi,² Zeinab M.S. Amin Girh, ²Eman R. Hassan,
²M.A.Bosila and ²Hoda M. Mekky

¹Department of Poultry. Diseases, Faculty Veterinary Medicine, Cairo University, P.O. Code 12211 Giza, Egypt

²Department of Poultry. Diseases, Veterinary Research Division, National Research Centre, P.O. Code 12311 Dokki, Giza, Egypt

Abstract : This study was conducted in order to investigate the beneficial effect induced by lysozyme, betain tylosine and/or colistine on performance of broiler chickens in presence of infection with avian pathogenic *E.coli* (APEC) treated with tylosine and or colistine. 360 one old day broiler chick divided into 9 equal groups; 40 chicks in each. Groups 2-8 experimentally infected with *E.coli* groups 2, 3, 4 and 6 treated with tylosine, gr 2 and 8 treated with colistine sulphate, groups 4 and 5 received lysozymes while groups 6 and 7 were given Betain. Birds of groups 1 and 9 were kept as negative and positive control; respectively. Average body weight (ABW), organ body weight (liver, intestine, Gizzard and Bursa) as well as organ body weight ratio (BWR) at 3rd, 7th and 10th dpi were calculated together with feed conversion rate (FCR) and average feed intake. Samples from liver and intestine were collected for histopathological examination. The best FCR was in group (6) that received tylosine and betain (1.44) followed by (1.46) group (7) which received betain then followed 1.49 of gr (5) received lysozyme then followed by group (2) which received tylosine and colistine and group (4) which received tylosine and lysozyme those showed similar result 1.50 followed by group (3) received tylosine which was 1.51 then control negative group (1) which was 1.53 then the lowest 1.72 in *E.coli* infected nontreated. Organ BWR in the 10th days post challenge the highest is spleen of group 7 received betaine which was 0.15, followed similar results (0.13) of group 6 and group 5, followed by group 4 which was 0.12, then groups 8, control positive group group 9 and gr 2 has similar results which was 0.11, finally group 1 which is 0.07. Concerning liver BWR by 10th days post challenge the highest was group 7 which was 4.09, followed by gr 6 which was 3.87, followed by group 5 which was 3.81, followed by group 4 which was 3.79, followed by group 2 which was 3.75, followed by control negative group 1 which was 3.50, followed by control positive group 9 which was 3.45, followed by group 3 which was 2.99, followed by group 8 which was 2.09. concerning intestine body weight ratio by 10th days post infection the highest was group 4 which was 7.19, followed by group 2 which was 6.66, followed by group 5 which was 6.24, then group 7 (betaine) which was 6.20, followed by group 6 which was 6.12, then group 3 received tylosine which was 6.10, followed by group 8 which was 5.96, followed by control positive group 9 which was 5.83, and finally group 1) which was 5.60.

Gizzared –proventriculus BWR it was found by 10th days post infection that highest ratio was gr 4 which was 4.47 followed by group 2 which was 4.16 followed by gr 3 which was 4.07 followed by gr 5 which was 4.04, followed by group 8 which was 3.66, followed by groups 6 and group 7 which showing same results 3.65, then followed by group 1 which was 3.60 and finally group 9 which was 3.57. Bursal BWR by the 10th days post infection the highest was

group 7 which was 0.21, followed by g 6 which was 0.20, followed by group 4 and group 8 which show similar results 0.18, followed by group 3 and group 5 which also show similar results 0.17, then groups 2 and group 9 are showing similar results which was 0.16, finally group 1 which was 0.15.

Histopathological finding of liver are varied from group to another as group one shows no changes while gr 2,6,7 and 8 showed mild changes after challenge in form of mild congestion of portal vein on the other hand control positive gr 9 showed severe congestion of the portal vein and sinusoids the hepatocytes suffering from vacuolar degeneration in the cytoplasm with disorganization of the hepatic cord, groups 3,4 and 5 almost showed the same lesion in the form of mild congestion of the portal vein, congestion of the central vein and vacuolar degeneration of hepatocyte which considered a reversible condition. Concerning histopathological finding of intestine, group (1) control negative group showing no lesions and normal histopathological section as shown in fig.(6), while gr (9) control positive showing severe congestion of the blood vessels in the sub mucosa accompanied with mild edema with inflammatory cells inflation in both the mucosa and the sub mucosa, while chickens groups 2,4,5 and 8 showing mild inflammatory cell infiltration as shown in fig (8), while groups 3,6 and 7 showing inflammation with inflammatory cell infiltration in mucosa and submucosal layer as shown in fig (9).this results revealed that antibiotic colistine and lysozymes control *E.coli* and prevent destructive effect on intestinal mucosa.

It could be concluded that antibiotics used against avian pathogenic *E.coli* still of value in control of infection by improving performance either single or in combination. The used prebiotic showed to play an important role in improving productivity of infected chickens. The used combinations are safe and effective. Therefore, we can advice to use of combination between antibacterial and prebiotic for prevention and control of infection in high risk facing poultry industry.

Key words : broiler performance, prebiotic, *E.coli*, tylosine, lysozyme , betaine, colistine.