

Studies on effect of prebiotic on immune response of broiler chicken to ND -AI combined inactivated vaccine

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Abstract : Effect of prebiotic on immune response to companied inactivated ND-AI vaccine in presence of bacterial infection were studied, 160 day old Cobb broiler chicks were divided into 4 equal groups; 40 chicks in each. Group 1 negative control non vaccinated while group 2 received lysozyme while groups 3 received Betaine, finally group 4 were kept as positive vaccinated control positive group. Chickens group were vaccinated subcutaneously with the recommended dose of inactivated ND-AI combined vaccine. *E.coli* O78 K80 H11 strains in phosphate buffered saline (PBS) was used as a bacterial challenge strain and was used by oral infection, each chick was given 0.5ml containing 1×10^4 viable microorganism/ml. Blood samples were collected weekly for haemagglutination inhibition (HI) test , bursa and liver were collected for histopathological examination.

Results of HI test against ND revealed that best mean antibody titer was 6.14 ± 0.69 in birds received Betaine (gr 3), followed by 6.00 ± 0.95 in those received lysozyme (gr 2) , followed by that of group 4 (positive vaccinated group infected with *E.coli*) which showed 4.00 ± 1.89 , then finally 4.00 ± 0.58 in negative control group. Results of AI haemagglutination inhibition (HI) antibodies was the best in group 2 that received betaine which was (4.86 ± 0.69) followed by 4.71 ± 0.95 in lysozyme (gr. 2) , followed by group (4) positive vaccinated group which was 4.43 ± 0.54 and finally 3.43 ± 0.79 in the negative control group¹. Also it was noticed that group (4) vaccinated infected with *E.coli* control positive showing clinical signs of *E.coli* infection in the form of diarrhea and subcutaneous inflammation (cellulitis) mortality rate was 30%.

Concerning histopathological findings the examined bursa, and liver stained sections of control negative group show no detectable pathological lesions until the end of the experiment, on the other hand it was found that Bursa of Fabricus of group (3) which received Betain showing moderate hyperplastic activity of the lymphoid follicle which later on become more obvious by the end of the experiment, concerning liver sections group (4) infected vaccinated non treated group showed severe hydropic degeneration other field showed severe congestion of the central vein while groups (2) and (3) were less affected as they showed mild congestion of portal vein.

In conclusion building immune foundation against respiratory virus is crucial and can be fulfilled by proper vaccination programme and can be enhanced by prebiotics which could improve antibody titers of inactivated respiratory vaccine , unfortunately this need further investigations specially of studding aspects of celluler immune response with used prebiotics.

Key words: broiler vaccination, prebiotic, *E.coli*, compined inactivated AI and ND, lysozyme, betaine.
