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Effect of Existing and Imposed Vaccination on Body Weight Against Gumboro in Broiler under Farm Condition

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Abstract: To assess the effect of existing and imposed vaccination programme on body weight in broiler under farm condition in Bangladesh an experiment was conducted in the Department of Medicine, Faculty of Veterinary Science, Bangladesh Agricultural University, Mymensingh-2202, Bangladesh from August to September 2003. Seven different broiler farms in the Sherpur District were taken dividing the farms into two groups-Group I: for existing vaccination and Group II: for imposed vaccination. From all the farms blood samples were collected before vaccination to check maternal antibody level. Infected as well as dead birds were undergone through necropsy examination properly in spot as well as BLRI, Savar, Dhaka. The present study revealed that the birds survived the diseases lost ranges from 1190-1320g (Group I) than those did not face Gumboro 1585-1620g (Group II). Thus, there is a significant variation in body weight in Gumboro affected broilers due to existing and imposed vaccination programme under farm condition.

Key words: Existing and imposed vaccination, Gumboro, body weight

Introduction

Poultry is now being recognized as a most popular enterprise due to less investment and quick return especially in broiler. Profitable broiler industry is always characterized by quick body weight gain with less feed. Due to high demand of animal protein in the country, only this sector can provide sufficient valuable protein to meet up the country need. But, practically, now a day, it is really troublesome to attain the peak production overcoming several constraints like diseases, vaccination failure, feed adulteration etc. Among them, vaccination is of great importance. Clinical record revealed that due to the frequent failure of existing vaccination programme, body weight is being hampered especially in Gumboro. There are so many scientific papers relevant to this (Narita *et al.*, 1991; Tsukamoto *et al.*, 1992; Singh *et al.*, 1994; Abdel-Fattah *et al.*, 1999; Kwon-Jung Taek *et al.*, 1999; Herdt *et al.*, 2000; Talukder *et al.*, 2000), but in Bangladesh there is no such research in this line. So, the present study will carry valuable information regarding vaccination programme to the farmers, immunologists, microbiologists as well as veterinary medicine specialists.

Materials and Methods

The investigation was carried out in seven different broiler farms in Sherpur district that were visited regularly for information about management, vaccination, biosecurity, clinical signs exhibited by individual birds during illness and medication etc. were recorded in a prescribed form. The birds suspected to be infected with Gumboro were collected to do

postmortem examination. Seven farms were divided in to two groups. Group I consisted of five farms and group II consisted of two farms. Farmers of group I practiced their own vaccination program for infectious bursal disease (Gumboro) where as imposed vaccination schedule was implemented in farms of group II. From all farms blood samples were collected before vaccination and 7 days after vaccination to check antibody level. Infected and dead birds were collected from individual farms and postmortem examination was conducted on spot and in Poultry disease diagnosis laboratory of Bangladesh Livestock Research Institute (BLRI), Savar, Dhaka-1341. Diseases and other problems faced during study period especially after outbreaks of Gumboro were studied. For confirmation dead birds also submitted to poultry disease diagnosis laboratory of Bangladesh Livestock Research Institute (BLRI), Savar, Dhaka. Cold chain was maintained during transportation of samples. The commercially available Nobilis GUMBORO D78 live vaccine of Intervet Company, Netherlands was used in this study. IBDV reference antiserum as hyper immune serum prepared in chicken was collected IBD antibody test kit from Trades Worth Limited (local agent of Sigma), 78 Motijheel, C/A, First floor, Dhaka, Bangladesh and was used in IELISA. The antiserum was buffered with protein stabilizers and preserved with sodium azide. IBD antibody test kit manufactured by IDEXX Laboratories, Inc. One Idexx Drive, Westbrook, Maine 04092 USA was collected from Trades Worth Limited (local agent of Sigma), 78 Motijheel, C/A, First floor, Dhaka, Bangladesh, for the detection of antibody to IBDV after vaccination in chicken

serum. The IELISA with a single dilution is designed to measure the relative level of antibody to IBDV in chicken serum. Farmers of group I were independent in use of vaccination program that is they use their own vaccination program where as farmers of group II were restricted to use imposed vaccination schedule for Gumboro. In this study farmers of group I was free to use their own vaccination program. One of the most important information is that no farmers of group I use booster dose for Gumboro. They vaccinate without consideration of maternal antibody status. Three out of five farmers use primary dose at day 5 one at day 7 and one at day 8.

In this study farmers of group II were restricted to use imposed vaccination program for Gumboro. The vaccination program used is presented below-

Vaccine	Age (days)	
	14 days	28 days
IBD Live	1 drop Route: Eye	1 drop Route: Eye

Blood samples were collected, at day 1, 5, 10, 14 before vaccination and 7 days after primary and booster dose, from two farms of group II. Ten birds were reared separately to continue the collection of blood at the age of day 20 and 25 to check maternal antibody up to the age 25 days. Blood samples also collected from farms of group I just before vaccination and 7 days after primary vaccination. At day 1 and 5 samples were collected aseptically directly from the heart using 1 ml disposable sterile syringes and 2.5 ml syringes were used for collection of blood at day 10, 15, 20 and 25 from the wing vein. Every time five blood samples were collected and soon after the collection the syringes with blood were kept slantly at 4-8°C for over night, so that blood can clot in one side of the syringe. Then the clotted blood was removed carefully with sterile needle and sera were kept into sterilized eppendorf tube. For each syringe separate needle was used. The sera were subjected to centrifugation at 1000 rpm for 10 minutes for clarification and finally the clarified sera were stored at -20°C until tested. IELISA was used for the detection of either MDA or antibody induced by vaccination in chicken. The presence or absence of antibody to IBDV is determined by relating the A (650) value of the unknown to the positive control mean. The positive control has been standardized and represents significant antibody levels to IBD in chicken serum. The relative level of antibody in the unknown can be determined by calculating the sample to positive (S/P) ratio.

Results and Discussion

The present study revealed that variation in vaccination programme greatly affects the birds' body weight (Table

1) that is in well agreement with the observation of Allan *et al.*, 1972; Faragher *et al.*, 1972; Hirai *et al.*, 1974; Tsukamoto *et al.*, 1992. It was also observed that the birds survived the disease lost weight ranges from 1190-1320g than those did not face Gumboro 1585-1620g (Table 1). Similar findings reported by Narita *et al.* (1991); Tsukamoto *et al.* (1992). Gumboro in chicken occurred in acute and subclinical forms. High morbidity and mortality (36-65%) was characterized by marked immunosuppression, lowered flock resistance, poor weight gains and increased feed conversion ratio (Singh *et al.*, 1994).



Plate 1: Gumboro affected flock in field condition



Plate 2: Hemorrhage in the thigh and breast muscles of Gumboro affected broilers

Table 1: Effect of Gumboro on performance (body weight) of birds

Farm No.	Age of outbreaks of Gumboro (days)	Average body weight at marketing age (g)
Farmers of group I		
1.	18	1245
2.	20	1280
3.	17	1190
4.	22	1320
5.	-	1600
Farmers of group II		
1.	-	1585
2.	-	1620

The decreased body weight (Plate 1) may be not only due to less feed intake and concurrent infections but also severe hemorrhage in the thigh and breast muscles (Plate 2) that strongly arrests the proper muscle development in the affected broiler.

Conclusion: Thus, in conclusion, it can be stated that there is a significant variation in body weight in Gumboro affected broilers due to existing and imposed vaccination programme under farm condition and thus the imposed vaccination programme should be recommended for use in farm condition to attain better body weight.

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