

SHORT COMMUNICATION
EFFECT OF COMBINED INFECTIOUS BURSAL DISEASE AND NEWCASTLE DISEASE VACCINES ON THE GENERAL PERFORMANCE OF BROILER CHICKS

By

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Abstract:

Tow hundred and ten, one-day old unsexed Lohman broiler chicks were allotted randomly to (7) groups, each group was subdivided to (3) replicates, each replicate with (10) chicks.

IBD D78 and ND –K strain vaccines were administered individually and as combined vaccines using different routes of administration (aerosol, dinking water, and the intranasal route).

The results indicate that the performance values of average body weight gain ,feed intake, feed efficiency and mortality rate of the chicks were not affected significantly ($P>0.05$).

الملخص

أجريت هذه التجربة لدراسة تأثير اللقاح المشترك (لقاح النيوكاسل +لقاح القمبورو) بطرق مختلفة على الأداء العام للدجاج اللحم . تم اختيار 210 كتكوت للاحم عمر يوم والتي تركت لأسبوع للتأقلم، ومن ثم تم توزيعها عشوائيا لسبع مجموعات وتكرار كل مجموعة لثلاثة مكررات (10 طيور لكل مكرر)،تم تحصين الكتاكيت بفاكسين القمبورو IBD D78 وفاكسين النيوكاسل(عترة K –ND) لثلاث مجموعات عن طريق الرذاذ وماء الشرب والتنقيط المنخري. كما تم تحصين ثلاث مجموعات أخرى بفاكسين القمبورو في عمر عشرة أيام ثم أعقبه فاكسين النيوكاسل في اليوم 21 من عمر الكتاكيت أيضاً عن طريق الرذاذ وماء الشرب والتنقيط المنخري أما المجموعة الأخيرة فلم يتم تحصينها واستعملت كمسيطر . أثبت نتائج التجربة أنه لا توجد هنالك فروقات معنوية لطرق التحصين المختلفة على الأداء العام للدجاج اللحم، وذلك في الوزن المكتسب واستهلاك العليقة وفعالية العليقة ونسبة النفوق.

INTRODUCTION

Expansion in poultry production and introduction of new breeds resulted in emergence of outbreaks. Among these diseases viral infections are of at most importance to poultry industry. Newcastle disease (ND) and

infectious Bursal disease (IBD) are major viral health problems to poultry in the Sudan.

The objective behind this research is to study the effect of combined vaccination IBD and ND vaccines by different methods of vaccination on the general performance of broiler chicks.

MATERIALS AND METHODS

Tow hundred and ten, one-day old unsexed Lohman broiler chicks were obtained from the Arab Company for Livestock Development, Khartoum, and kept in the poultry farm of College of Agricultural Studies, Shambat, Sudan University of Science and Technology. At the age of seven days, the chicks were divided randomly into (7) groups (1, 2, 3, 4, 5, 6 and 7). Each group was subdivided to (3) replicates, each of (10) chicks. Then each replicate was weighed and provided with feed and tap water *adlibitum*. The diet was formulated to meet the nutrients requirement of the broiler chicks according to National Research Council (NRC), Sudan (1984).

Table (1). : Formulation and calculated analysis of the experiment rations

Ingredients %	Starter %	Finisher %
Sorghum	63.0	63.0
Wheat bran	2.5	8.5
Groundnut cake	8.0	7.0
Sesame cake	20.0	13.0
Concentrate	5.0	5.0
Oil	-	2.0
Oyster shell	0.5	0.5
Salt	0.5	0.5
Total %	100	100
Crude protein %	22.0	20.0
Metabolize energy Kcal/kg	30.0	32.0
Lysine %	1.1	1.1
Methionine %	0.45	0.4
Calcium %	1.1	1.1
Phosphorus %	0.7	0.7
Ash %	5.0	4.65
Crude fiber %	4.9	4.9
Ether extract %	4.65	5.0

The experimental period was extended to 7 weeks. The Newcastle disease vaccine Komarov strain (K), freeze-dried live vaccine supplied by Poultry Viral Vaccines Unit, Viral Vaccines Production, Central Veterinary Research lab, Soba. The infectious bursal disease vaccine (IBD) D78 was used as alive freeze-dried vaccine. For administration in drinking water, (IBD) D78 vaccine was dissolved in quantity of 1000 doses per liter, which should be consumed by the chicks within approximately two hours. Aerosol generator (Black and Decker, model 8.102 Switzerland), for administering both ND+ (IBD) D78 vaccines. The apparatus has a nozzle of 1 mm diameter, a discharge flow rate of 2.5 ml/ second and gives a particle diameter of approximately 1-30 μ m and should be spread as a coarse spray evenly over the chicks at a distance of 30 to 40cm. The intranasal vaccination, the vaccine was dissolved in physiological saline solution (usually 30 ml per 1000 doses) and administered by a standardized dropper and one drop was administered intranasally.

At the age of 10 days, chicks in groups 1, 3 and 5 were given the IBD-D78 and ND-K vaccines through the aerosol, intranasal and in drinking water respectively. While chicks in group 2, 4 and 6 were given the IBD-D78 vaccine at the age of 10 days then the ND-K at the age of 21 days also through the aerosol, intranasal and in drinking water respectively. Group 7 chicks were not vaccinated and used as control.

The feed intake: The amount of feed intake was calculated weekly by subtracting the left over from the total feed given throughout the week.

Average body weight: weekly live weight was calculated by weighing the chicks in each group collectively after the feeders were removed early in the morning.

Feed efficiency was calculated as:

$$\text{Feed efficiency /bird} = \frac{\text{Feed intake /gm}}{\text{Body weight gain/gm}}$$

Mortality rate: Mortality was recorded on daily basis throughout the experimental periods.

$$\text{Mortality \%} = \frac{\text{Number of dead chicks in period}}{\text{Started number of day old chicks}} \times 100$$

Statistical analysis: The data collected were subjected to statistical analysis using analysis of variance (one way ANOVA), and the comparison of means was determined using Duncan's Multiple Range test (Duncan, 1955).

RESULTS

Average performance values of body weight gain, feed intake feed efficiency and mortality rate of chicks vaccinated by combined IBD and ND vaccines by different methods of vaccination or for those given the vaccine separately are shown in table (2).

Results showed no significant ($P>0.05$) difference among all treatments in body weight, feed intake, feed efficiency and mortality rate compared to the control group.

Table (2): Average performance values of body weight gain, feed intake and mortality rate of chicks vaccinated by different methods of vaccination using IBD vaccine and ND kamarov vaccine strain

Method of vaccination	Initial weight (gm)	Final weight (gm)	Body gain (gm)	Feed intake (gm)	Feed efficiency. gm feed: gm meat	Mortality Rate (%)
Group(1)Aerosol: At 10days old IBD+ND-K	45	1277.8	1232 ^a	258 ^a	2.237 ^a	2.000 ^b
Group(2)Aerosol : At 10 days old IBD-D78 At 21days old ND	45	1283	1238 ^a	2592a	2.23 ^{ab}	2.33 ^b
Group(3)Intranasal : At 10days old IBD+ND-K	45	1292	1247	2605 ^a	2.223 ^{abc}	4.0 ^a
Group(4)Intranasal: At 10 days old IBD-D78 At 21days old ND	45	1223	1218	2602	2.21 ^c	2.333 ^{ab}
Group(5)Drinking water : At 10days old IBD+ND-K	45	1253	1208 ^a	2599 ^a	2.227 ^{abc}	3.000 ^{ab}
Group(6)Drinking water: At 10 days old IBD-D78 At 21days old ND	45	1255	1210 ^a	2590 ^a	2.223 ^{abc}	3.333 ^{ab}
Group(7)Control	45	1260	1215	2610 ^a	2.227 ^{abc}	2.667 ^{ab}
F-value	-	-	0.45	0.128	0.14	0.47

* Means not followed by the same letter not differ significantly at ($p>0.05$).

DISCUSSION

The present study was designed to investigate the effect of the two vaccines given both at once compared to each vaccine given individually using different routes of administration on the general performance of broiler chicks. The results obtained were in line with that recorded by Stonescu *et al.*, (1977) and Rao *et al.*(1978). They found that no significant difference ($P>0.05$) was

observed in body weight gain in broiler chicks vaccinated with Lasota vaccine given in drinking water or through aerosol. Wyeth *et al.*(1981) found that there was a significant increase($P<0.05$) body weight and improvement feed conversion ratio of chicks vaccinated by IBD compared to the control .

The results of the present study concluded that: at the age of 10 days the IBD and ND vaccines can be given together without any adverse effects on the general performance of broiler chicks.

The authors recommended the use of combined vaccination regimen for infectious bursal disease and ND Lasota disease than either individual vaccination to minimize the risk factor of outbreaks exposure.

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