

## EFFECT OF ANTIBIOTICS ON THE PERFORMANCE OF FAYOUMI CHICKS

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### ABSTRACT

A total of 480 day-old Fayoumi chicks were randomly selected and divided into four groups of 120 chicks each. The chicks in each group were further sub divided into 3 replicates giving 40 chicks to each replicate. The treatments included feed supplementation with TM-200, Tylan Premix and Reotin F upto 5<sup>th</sup> week of age during winter (Phase I) and summer (Phase II). The average body weight gain during Phase I (November-December) was significantly ( $P < 0.05$ ) increased in all supplemented groups whereas highest weight gain was obtained consequent to supplementation with Tylan Premix. The average feed consumption and mortality was significantly higher ( $P < 0.05$ ) in non supplemented control group. During Phase II (May-June) average body weight gain was significantly higher ( $P < 0.05$ ) in supplemented group as compared with control group. There was no significant difference in average feed consumption and mortality among all the four groups. The study provided evidence that the supplementation of feed with dietary antibiotics particularly with Tylan Premix was efficacious during winter season but these effects were reduced under spell of summer season irrespective of nature of antibiotics.

**Key Words:** Supplementation, Antibiotics, Fayoumi Chicks, Body weight gains, Feed Consumption, Mortality, Feed Conversion.

### INTRODUCTION

Poultry Industry in Pakistan developed tremendously over the past three decades. This rapid development has of course helped to bridge the protein gap in human diet. The mortality losses in chickens attributable to various known or un-known factors accounted for a great loss annually (Qureshi, 1981). Early chick mortality caused by mismanagement in addition to infectious diseases plays an important role in the economics of production (Gordon, 1990). Avilamycin has been reported to improve live weight by 3% and feed conversion efficiency by 2% in chickens when given during first 3 weeks of life (Jamroz *et al.*, 1995, Loddi *et al.*, 2000). The effects of antibiotics are not manifested under good hygienic conditions (Kahraman *et al.*, 2000). The improvement in live weight is attributable to better feed conversion due to antibiotics (Silva *et al.*, 2000, Deniz and Yavuz, 2000). Penicillin when given in dirty versus clean water, the growth response was independent of water treatment and the magnitude of growth response ranged from 0.9 to 18.3% (Dafwang *et al.*, 1996). Avoparcin increased live weight in broilers when given at 7.5, 10 and 15 mg/kg diet fed for 70 days (Krinke and Jamroz, 1996). Administration of antibiotics from hatching to 53 days age has been reported to increase body weight, lower feed intake and improve feed conversion index (Fabris *et al.*, 1997). The advantageous effects of

antibiotics are adversely affected due to environmental temperature (Gokhan and Akcan, 1999; Lana *et al.*, 2000, Fantova and Matlova, 2000).

In the earlier studies effect of different commercially available antibiotics has been studied on the performance of variety of commercial stocks. The present study has, therefore, been envisaged to examine effect of readily available and commonly used dietary antibiotics on the performance of genetically distinct rural Fayoumi chicks under local environmental conditions.

### MATERIALS AND METHODS

This study was conducted at Breeding and Incubation Section of Poultry Research Institute, Rawalpindi. A total of 8480 day-old Fayoumi chicks were used in the study. They were randomly divided into four groups A, B, C and D. The birds in each group were further sub-divided into 3 replicates each having 40 chicks. They were maintained in 12 separate pens on deep litter system of housing using completely randomized design under optimal managerial and temperature conditions. The birds were fed on experimental chick starter ration prepared at Feed Mixing Plant of the Institute. All experimental rations were formulated to contain 20% Crude Protein and 1775 K.cal/Kg energy. The chicks in groups A, B and C were supplemented with T.M-200 (Terramycin 20%),

Tylan Premix (Tylosin Phosphate 10%) and Reotin-F (Furazolidone 4.5%) at the recommended curative dose level of 125, 50 and 450 gm per 50 Kg of experimental feed, respectively, while, those in group-D were fed the experimental ration without any supplementation to serve as control treatment. The chicks had free access to clean and fresh drinking water. The experiment was conducted during both winter and summer seasons of the year to study seasonal effects. The data were collected on the performance parameters such as average weekly body weight gain, average weekly feed consumption and mortality.

The experiment was run for 5 weeks and the data thus collected were subjected to statistical analysis (Steel and Torrie, 1980).

## RESULTS AND DISCUSSION

The findings of experiments under Phase I (November-December) and Phase II (May-June), are given in Table 1 and Table 2. It was noted that during Phase I body weight gain was similar under TM-200 and Reotin-F whereas highest weight gain ( $P < 0.05$ ) was obtained under Tylan Premix treatment which was significantly higher from the other supplemented and non supplemented groups. The control treatment showed lowest ( $P < 0.05$ ) body weight. Average feed consumption was found to be identical under all supplemented groups without any significant

difference. There was significantly ( $P < 0.05$ ) higher feed consumption in the control group. The administration of antibiotics in 3 experimental groups reduced feed consumption as compared with control group presumably due to improved metabolism caused by reduction of intestinal competitive microflora. There was markedly ( $P < 0.05$ ) reduced mortality in all three supplemented treatments as compared with control group which can be attributed to reduction in infection consequent to the effect of antibiotics used.

During Phase II body weight gain was similar under TM-200, Tylan Premix and Reotin-F which was identical to responses in Phase I of experiment, though overall weight gain during Phase II was on lower side. Average feed consumption during Phase II of experiment was not different in all treatments though lower than what was observed in Phase I which can be attributed to the uniform effect of ambient temperature on feed intake regardless of antibiotics used.

There was no significant difference in rate of mortality in all treatments during Phase II whereas reduced mortality was observed in three treatment supplemented with antibiotics in Phase I as compared with control group, which implies that incidence of infection which increased during winter (Phase I) was substantially reduced by means of antibiotics and this effect was presumably off set due to ambient temperature in Phase II.

**Table 1: Effect of different antibiotics on performance of Fayoumi chicks during phase I. (November-December)**

Type of antibiotics tested	Weight gain (gm)	Feed consumption (gm)	Feed conversion ratio	Mortality (No)
TM-200	245 ± 8.54	738.333 ± 11.547	3.197	1.00 ± 0.58
Tylan Premix	* 288 ± 10.00	783.333 ± 23.094	2.719	1.00 ± 1.00
Reotin F.	260 ± 4.58	786.667 ± 5.774	3.025	1.00 ± 0.58
Control	* 210 ± 6.66	* 846.667 ± 11.547	4.031	* 6.00 ± 0.00

± Standard deviation

\* ( $P < 0.05$ )

Mean Temperature: 11.4 C° to 15.8 C°

Mean Relative Humidity: 60.1% to 60%

**Table 2: Effect of different antibiotics on performance of Fayoumi chicks during summer months (May-June)**

Type of antibiotics tested	Weight gain (gm)	Feed consumption (gm)	Feed Conversion Ratio	Mortality (No)
TM-200	232 ± 19.97	773.333 ± 5.774	3.333	1.00 ± 1.100
Tylan Premix	265 ± 20.22	770.000 ± 0.000	2.905	1.00 ± 0.00
Reotin F.	245 ± 8.50	780.000 ± 10.000	3.183	2.00 ± 1.53
Control	* 195 ± 2.65	796.667 ± 20.817	4.085	3.00 ± 1.53

± Standard deviation.

\* ( $P < 0.05$ ).

Mean Temperature: 24.9 C° to 30 C°

Mean Relative Humidity: 38.8% to 44.1%.

**Table 3: Effect of antibiotics on economics of production performance in Fayoumi chicks (0 day to 5 week) during phases I and II**

Type of antibiotics used.	Chick cost (Rs.)	Feed cost (Rs.)	Antibiotic cost (Rs.)	Total cost (Rs.)	Total weight gained (Kg).	Cost per Kg weight gain (Rs)
<b>(a). PHASE-I (November-December).</b>						
A = T.M-200	720	780.36	102.15	1602.51	28.42	56.38
B = Tylan Premix	720	786.73	54.60	1561.33	33.69	46.34
C = Reotin F	720	782.69	50.78	1553.47	30.16	51.50
D = Control (Un supplemented)	720	739.43	-	1459.43	21.42	68.13
<b>(b). PHASE-II (May-June).</b>						
A = T.M-200	720	772.02	100.99	1593.01	26.91	59.19
B = Tylan Premix	720	777.44	54.84	1552.28	31.00	50.07
C = Reotin F	720	772.36	50.11	1542.47	28.17	54.75
D = Control (Un supplemented)	720	753.87	-	1473.87	21.45	68.71

The feed conversion efficiency in the group which was supplemented with Tylan Premix was found to be better as compared with the supplemented groups during both the phases. FCR during Phase I was 2.719 and 2.905 during Phase II. A slightly reduced efficiency during Phase II can be attributed to high ambient temperature which reduced feed intake and body weight in line with earlier reports (Lana *et al.*, 2000, Gokhan and Akcan, 1999, Fantova and Matlova, 2000).

This study suggests that supplementation of ration with Tylan Premix is important during winter and that when antibiotics are used in ration at curative levels to improve feed conversion efficiency, shed temperature be effectively controlled during summer. The administration of antibiotics caused economic benefit in terms of lower cost of per Kg weight gain as illustrated in Table 3.

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