

THE EFFECT OF FEEDING ANTIBIOTICS ON GROWING AND LAYING TURKEYS

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SUMMARY

Feeding turkeys on antibiotic (procaine penicillin, terramycin and aureomycin) supplemented rations at different levels of 10, 20, 30 and 50 p.p.m. failed to assure any significant increase in weight and in efficiency of food utilization. Slight differences in weight of the supplemented and the unsupplemented turkeys during the first 16 weeks of age were observed and disappeared thereafter. These differences were without any special trend. Feeding the various antibiotics at the different levels did not cause any obvious decrease of mortality in turkey. Adding antibiotics to the rations of laying turkeys slightly increased the number of eggs and the total egg weight and it decreased the starch value required for producing one kilogram of eggs with 4.7-8.2% than the unsupplemented turkeys. Antibiotic supplementation did not affect the fertility or hatchability of eggs. It was concluded that feeding antibiotics for turkeys are not economical under our local conditions because the cost of producing one kilogram live weight of the supplemented turkeys was higher than that in the unsupplemented ones.

INTRODUCTION

It was stated that minute quantities of antibiotics added to the ration of poultry may lead to impressive improvements in the rate of growth of young poults and to better utilization of food (2,4,7,8,10,11, 14,15 and 16).

More egg production and better hatchability was stated to be produced by the addition of different antibiotics (1,3,5,9,12 and 13). Schneider 1956 (14) found that the response of antibiotics in turkeys is greater than chicks. This study was directed to study the effect of adding various antibiotics at different levels to turkey rations on growth, mortality and egg production.

EXPERIMENTAL AND METHODS

Chicks were taken after hatching from the flock of the Experimental Station of Poultry Nutrition, Faculty of Agriculture, Giza (U.A.R.). The total number of birds in growth studies was 1198 from both the local breed (Baladi) and the foreign breed (white Holland).

The number of layers was 109 from both breeds. The study was carried on all the chickens from the hatching day and closed at 24 weeks of age (except adding 50 p.p.m., it ended at 20 weeks). The experimental ration for growing turkeys consisted of 32% crushed corn and barley 35% rice polish, 30% undecorticated cottonseed cake and 3% meat meal. The ration contained 12.9% digestible protein and 64.9 kg. starch equivalent. The antibiotics used were procaine penicillin, terramycin and aureomycin. The supplementation of antibiotics (penicillin, terramycin and aureomycin) were 10,20, 30 and 50 p.p.m. of the ration.

The ration of egg production was prepared from the same ingredients but contained 11.8% digestible protein and 68.6 kg. starch equivalent. The level of supplementation was 50 p.p.m. Chopped green fodder salt and lime were added to the rations.

The system of rationing and the quantity of the mash per chick was as recommended by Ghoneim 1951 (6).

RESULTS AND DISCUSSION

1.--Growth

Table 1 shows the data obtained by feeding antibiotics at the different levels of supplementation in turkey rations.

It can be noticed that feeding foreign turkeys at 10 p.p.m. of penicillin and aureomycin caused an increase of weight over the control only from the 12th week in case of the former and from the 16th week in case of the latter. The increase in weight continued until the end of the experimental period. Terramycin failed to assure any increase in weight. In case of local turkey, the antibiotics did not cause any increase of weight in the first 4 weeks. During the successive intervals until the 20th week the weight of the supplemented groups were slightly higher than the control.

Feeding 20 p.p.m. of the three different antibiotics showed that the weights of the supplemented groups were more than the control during the first 16 weeks for both foreign and local turkeys. Only terramycin fed group of foreign turkeys and the aureomycin fed group of local turkeys that showed a continuous increase until the 24th week.

Feeding 30 p.p.m. of the various antibiotics showed a slight increase in foreign turkeys at the first 16 weeks of age but the highest response was at the 12th week. Penicillin and aureomycin showed a continuous increase until the 20th week. In case of local turkeys only aureomycin that showed a continuous increase in weight while the other two antibiotics failed to assure any increase.

TABLE 1.—Weight of turkeys fed on antibiotic supplemented rations at different levels

Age in weeks	10 p.p.m.				20 p.p.m.				30 p.p.m.				50 p.p.m.			
	Control	Peni- cillin	Terra- mycin	Aureo- mycin	Control	Peni- cillin	Terra- mycin	Aureo- mycin	Control	Peni- cillin	Terra- mycin	Aureo- mycin	Control	Peni- cillin	Terra- mycin	Aureo- mycin
Foreign turkeys																
0	48	48	48	48	48	48	48	48	47	47	47	47	46	46	46	46
4	131	135	131	119	158	169	170	192	145	164	156	170	141	150	148	149
8	275	264	248	254	394	395	452	452	354	395	387	415	368	411	398	385
12	537	559	486	537	795	739	903	886	701	845	863	941	757	816	828	739
16	940	970	865	958	1374	1296	1528	1511	1254	1304	1465	1533	1405	1496	1518	1374
20	1621	1694	1552	1700	2253	1941	2412	2491	1949	1795	2077	2190	2235	2282	2348	2198
24	2288	2370	2220	2383	2985	2895	3256	3061	2632	2217	2600	2691	—	—	—	—
Local turkeys																
0	50	50	50	50	53	—	—	—	52	52	52	52	48	48	48	48
4	125	122	120	123	157	161	188	194	178	183	160	184	154	151	154	162
8	234	265	267	260	402	391	495	433	430	420	404	421	405	413	488	431
12	480	538	536	520	794	703	920	887	845	870	868	945	813	785	778	840
16	827	930	921	920	1341	1243	1519	1517	1372	1350	1408	1607	1498	1394	1355	1546
20	1379	1463	1557	1540	2075	1853	2189	2362	1900	1882	1933	2309	2364	2200	2128	2330
24	2062	2000	2086	2040	2962	2510	2990	2907	2530	2544	2508	2942	—	—	—	—

Adding 50 p.p.m. of penicillin and terramycin caused an increase in weight over the control of foreign turkeys all over the experimental period while aureomycin caused slight increase in weight during the first 8 weeks only. In case of local turkeys only aureomycin that showed an increase in weight in the first 16 weeks of age.

TABLE 2.—The total gain in weight and the growth measure during the whole experimental period

Level of supplementation	Gain in weight				Growth measure			
	Control	Penicillin	Terramycin	Aureomycin	Control	Penicillin	Terramycin	Aureomycin
Foreign turkeys								
10	2157	2235	2089	2264	3.202	3.090	3.306	3.050
20	2826	2726	3086	2869	2.652	2.533	2.238	2.407
30	2487	2053	2444	2511	2.777	3.364	2.826	2.750
50	2189	2236	2302	2152	2.256	2.216	2.148	2.306
Local turkeys								
10	1937	1878	1966	1917	3.565	3.677	3.513	3.603
20	2440	2349	2802	2713	2.469	2.940	2.465	2.564
30	2352	2361	2348	2728	2.936	2.925	2.941	2.504
50	2316	2153	2081	2283	2.138	2.306	2.394	2.179

Table 2 shows that the growth measure during the whole experimental period for both the supplemented and the unsupplemented groups of turkeys followed an opposite direction to the gain in weight. Considering the growth measure of the control equals 100, it would be as shown in following table for the different supplemented groups :

Level of supplementation	Foreign turkeys			Local turkeys		
	Penicillin	Terramycin	Aureomycin	Penicillin	Terramycin	Aureomycin
10 p.p.m.	98.1	103.2	93.7	103.1	95.7	101.1
20 p.p.m.	96.0	92.1	105.2	117.4	107.5	97.5
30 p.p.m.	121.1	101.7	99.0	99.6	100.2	85.2
50 p.p.m.	98.2	95.2	102.2	107.9	112.0	101.9

Feeding the various antibiotics at the different levels failed to assure any obvious decrease in mortality rates of turkeys as shown in Table 3.

TABLE 3.—Total mortality rates in different supplemented and unsupplemented turkeys

Level of supplementation	Foreign turkeys				Local turkeys			
	Control	Penicillin	Terramycin	Aureomycin	Control	Penicillin	Terramycin	Aureomycin
10 p.p.m.	54.7	67.3	60.8	64.7	31.6	57.9	65.0	50.0
20 p.p.m.	42.1	50.9	46.4	31.7	43.3	42.1	42.1	36.4
30 p.p.m.	50.0	42.9	39.3	60.0	28.6	25.0	12.5	33.3
50 p.p.m.	24.4	18.2	29.5	22.2	17.6	38.8	15.8	11.1

2.—Egg production

Table 4 shows that adding antibiotics to the rations of foreign laying turkeys caused an increase in both number of eggs and total egg weight so that the starch equivalent (S.E.) required for the production of one kg. eggs was decreased. The local turkeys gave contradicting results. Antibiotic supplementation at a level of 50 p.p.m. decreased the starch equivalent required for producing 1 kg. of egg in foreign layers with 5.7, 8.2 and 4.7 for penicillin, terramycin and aureomycin respectively.

It was found that the cost of producing one kg. eggs in case of the antibiotic supplementation was more than that of the unsupplemented turkeys because of the high price of antibiotics. Therefore, it can be said that adding antibiotics to laying turkey rations is not economical under our local environmental conditions.

The fertility and hatchability of eggs produced by turkeys were nearly equal in both the supplemented and unsupplemented groups as shown in the following table .

Treatments	Foreign turkeys		Local turkeys	
	Fertility	Hatchability	Fertility	Hatchability
Control	72.73	73.26	75.81	58.15
Penicillin	76.45	63.01	70.90	58.95
Terramycin	83.80	69.55	76.41	66.48
Aureomycin	70.94	72.97	—	—

TABLE 4.—Egg production of turkeys fed on different antibiotics supplemented rations

Item	Foreign layers				Local layers		
	Control	Penicillin	Terramycin	Aureomycin	Control	Terramycin	Aureomycin
Av. No. of eggs/ben/month	5.7	5.6	6.1	6.0	7.7	5.2	5.4
Av. wt. of eggs (in gm.)	78.3	77.8	78.6	77.8	80.0	77.4	80.1
Av. total egg wt/hen/month (in gm.)	443.5	439.7	481.5	464.0	623.4	399.6	432.9
S.E. required for producing 1 kg. eggs (in kg.)	9.414	9.461	8.641	8.967	6.674	10.413	9.610

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تأثير المضادات الحيوية على النمو ونتاج البيض في الرومي أحمد غنيم ، وإبراهيم الجندى والسيد جهاد

الملخص

أضيفت المضادات الحيوية الثلاثة (البنسلين والتيراميسين والاورميسين) الى علائق النمو بمقدار ١٠ ، ٢٠ ، ٣٠ ، و ٥٠ جزء في المليون (جم/طن) من العليقة وقد بدأت الدراسة من اليوم الأول للفقس حتى عمر ٢٤ أسبوعاً على ١١٩٨ كتكوتا رومياً (أجنبي وبلدى) . ولقد استمرت تجارب انتاج البيض باضافة المضادات الحيوية السابقة بمقدار ٥٠ جم/طن عليقة لمدة ستة أشهر على عدد ١٠٩ دجاجة رومى أجنبى ومصرى (بلدى) . ان الزيادة فى النمو التى نتجت من اضافة المضادات الحيوية غير مؤكدة فى مختلف المعاملات وكانت أكبر زيادة نتجت عنها هى فى الستة عشر أسبوعاً الأولى من العمر بينما تضائل تأثيرها بتقدم العمر بعد ذلك .

ولقد كان تأثير المعاملة بالاورميسين أكبر فى حالة الرومى المصرى عنه بالنسبة للرومى الأجنبى كما درست نسبة الوفيات بين المجاميع المعاملة وغير المعاملة ولم تحقق اضافة المضادات الحيوية أى نقص فى نسبة الوفيات حيث كانت الفروق غير مؤكدة .

ولقد ثبت فى تجارب انتاج البيض أن اضافة المضادات الحيوية سببت زيادة فى انتاج البيض بمقدار ٧٥ ، ٧٥ ، و ٣٦ لكل من المجاميع المعاملة بالبنسلين والتيراميسين والاوروميسين بالتوالى ولكن هذه الزيادة قابلتها زيادة فى أسعار العلائق مما أوضح أن التفضية على المضادات الحيوية غير اقتصادية الى أن تتمكن من انتاجها محلياً . كما أن تأثير اضافة المضادات الحيوية كان غير مؤكد بالنسبة للخصب أو نسبة الفقس فى انتاج البيض لكل من الرومى البلدى أو الأجنبى .