Pak Jour. Agri. Sci.
22 (4), 220, 1985

EVALUATION OF DIFFERENT WATER SOLUBLE ANTIBIOTICS AS STIMULANT FOR BROILER CHICKS

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ABSTRACT

To study the effect of different water soluble antibiotics on the performance of briolers, four medication treatments including plain water, and water with polymycin, gibb-mycin and neo-terramycin-25 were tried on White Plymouth Rock straight run chicks for a period of 9 weeks. Significantly more weight gain and improved feed efficiency was recorded in the groups treated with different antibiotics as compared to those maintained on plain water. The differences in feed consumption, water intake and dressing percentage, however, could not be revealed among different groups. The number of chicks died during the experimentation was 6, 3, 5 and 3 in the respective groups. The administration of neo-terra mycin-25 was found to be economical with best results followed by those of polymycin and gibb-mycin.

INTRODUCTION

Nutritional imbalance and unhygienic conditions cause hazards in the production of broilers. The discovery of growth stimulating effect of antibiotics during the last about half century is one of the most important events in the poultry industry. The major contribution of these products in poultry production has come through lowered mortality, increased growth rate, improvement in feed efficiency and greater uniformity of market birds. As a general practice antibiotics are given in animal feed to suppress the intestinal micro-organisms that either compete with the host for essential nutrients or cause low grade infection. Certain antibiotics when fed continuously in animal feed caused bacteria to become resistant to the drugs used (Hartiman *et al.*, 1972)

Water soluble antibiotics are also available in the market but the infor-

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mation with regard to their comparative value is scanty. An experiment was, therefore, planned to study the effect of different water soluble antibiotics on the weight gain, feed efficiency, water intake and mortality of broiler chicks. Economics of antibiotics supplementation was also studied.

MATERIALS AND METHODS

The experiment was conducted on 120 day-old White Plymouth Rock chicks. The chicks were wing banded and randomly divided into 12 groups of 10 chicks each. The chicks were reared upto 9 weeks of age in electrical heated thermostatically controlled brooder. All the groups were housed in separate compartments. The following arrangements of various antibiotic treatments were followed :

Treatment	*A* :	No medication (control)
Treatment	*B* :	Polymycin (one ounce per 10 gallons of drinking water), first two weeks continuously and then once a week till 8 weeks of age.
Treatment	*C* :	Gibb-mycin (one ounce per 10 gallons of drinking water), first two weeks continuously and then once a week till 8 weeks of age.
Treatment	*D* :	Neo-terramycin-25 (one level teaspoonful per two gallons of drinking water daily for first two weeks only.

Each treatment was assigned to three groups of birds at random. The birds were provided with continuous light throughout the experimental period. Feed and water were given *ad libitum*. Initial, weekly and final body weight record of individual chicks were maintained. The record of feed consumption were kept at weekly intervals, whereas water consumption record was kept on daily basis. At the end of the experiment four chicks from each group were randomly taken, weighed and their dressing percentages were calculated.

The experiment was planned according to completely randomized design. The data were subjected to statistical analysis using analysis of variance technique as described by Steel and Torrie (1980) and the comparison of mean differences was made by Duncan's Multiple Range Test.

RESULTS AND DISCUSSION

Weight Gain : The experimental chicks given treatments A (control), B (polymycin) and C (gibb-mycin) and D (neo-terramycin-25) showed average gain in body weight of 529.5, 595.3, 582.5 and 658.2, respectively. Highly significant (P/0 01) differences were observed among the weight gains of birds medicated with different water soluble antibiotics. The chicks medicated with neo-terramycin-25 were significantly (P/0.01) heavier than those in control group. But the differences in the weight gain of chicks medicated with polymycin, gibb-mycin and neo-terramycin-25 were non-significant. Overall data showed that the chicks administered neo-terramycin-25 were found to be heavier than all other groups which were treated with soluble antibiotics like polymycin and gibb-mycin. Apparently, the chicks gained 12.5, 10 and 24.2 % more weight as compared to control group. Similar findings were reported by Kolar and Seymour (1971) and Buksh *et al.* (1980). They all reported improvement in weight gain of birds given water soluble antibiotics.

Table 1. *Average values of weight gain, feed consumption, feed efficiency water consumption and dressing percentage of broiler chicks.*

Particulars	Treatment			
	A	B	C	D
Weight gain (g)	529.5	595.3	582.5	658.2
Feed consumption (g)	1858.6	1819.1	1810 2	1829.6
Feed efficiency	3.51	3.05	3.10	2.77
Water consumption (ml)	6306.7	5715.9	5480.6	5869.39
Dressing percentage	57.06	58.03	57.12	58.39

Feed Consumption : The chicks given plain tap water, polymycin, gibb-mycin and neo-terramycin-25 showed average feed consumption of 1858.6, 1819.1, 1810.2 and 1829.6 g per chick, respectively. Apparently, the chicks of the control group consumed maximum feed followed by those given neo-terramycin

-25, polymycin and gibb-mycin. The data, however, revealed non-significant differences among different treatments. The results of the present study are in line with the findings of Foster (1967).

Feed Efficiency : The average feed efficiency values of birds given treatments A, B, C and D were 3 51, 3.05, 3.10 and 2.77, respectively. Statistically significant (P/0.01) differences were observed among the feed efficiency values due to different treatments. The birds given treatment D showed significantly improved feed efficiency as compared to those in control group. Chickens under treatments B and C showed significantly (P/0.05) better feed efficiency than those under treatment A. Similarly, chicks maintained under treatment D showed significant (P/0.05) difference as compared to those given treatment C. However, the chicks kept under other treatments differed non-significantly in respect of feed efficiency. The results of the present study agree with the findings of Splitek and Verba (1976) and Buksh *et al.* (1980). They observed that the improvement in feed efficiency may be due to the destruction of harmful intestinal microflora which compete for the nutrients in the intestinal tract of the birds.

Water Consumption : The chicks on treatments A, B, C and D showed average water consumption of 6306.7, 5715,9 5450.6 and 5869.9 ml per chick during the experimental period, respectively. Apparently, the chicks on treatment A drank more water followed by those on treatments D, B and C. The data when analysed showed non-significant differences among the different treatments.

Mortality : The number of chicks that died throughout the experiment was 6, 3, 4 and 3 in the groups of chicks administered plain tap water, polymycine, gibb-mycin and neo-terramycin-25, respectively, showing mortality percertage of 20.0, 10.0, 16.6 and 10.0 in the respective groups. Medicated birds showed less mortality (12.22 %) as compared to unmedicated (20.80 %). Similar findings were reported by Splitek and Verba (1976) and Buksh *et al.* (1980), who observed lower mortality in chicks given soluble antibiotics in drinking water. The possible explanation for this could be the bacteriostatic effect of water soluble antibiotics on certain harmful bacteria causing stress in chicks. Escherichia coli count was also considerably reduced. The reason for variation in mortality in different groups could be the difference in gastro-intestinal absorp-

tion of different antibiotics. However, the results of the present study are not in agreement with the findings of Amin *et al.* (1977) who observed non-significant differences in the mortality of antibiotic treated and untreated birds.

Dressing Percentage : The average values for dressing percentage were 57.06, 58.03, 57.12 and 58.39 in plain tap water, polymycin, gibb-mycin and neo-terramycin-25 treated birds per group, respectively. The values ranged from 54.4 to 60.0% in all the slaughtered birds. Statistically non-significant differences were observed in dressing percentage of broiler chicks maintained under different treatments. The results revealed that medication with different water soluble antibiotics did not improve the dressing percentage of broiler chicks. These results are supported by the findings of Bukeh *et al.* (1980) and Haq (1983) who reported non-significant difference in dressing percentage of broilers medicated with different water soluble antibiotics. The use of neo-terromycin-25 was found to be the most economical followed by these of polymycin and gibb-mycin.

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