Effect of supplementation of diets with BMD and Virginiamycin on the growth performance, carcass characteristics and bacterial population in broiler chickens

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Abstract

Broiler chicks of a commercial strain were fed diets containing Bacitracin Methylene Disalicylate @150 g and 200 g/MT and Virginiamycin 500g/MT feed upto 6 weeks of age to evaluate their effects on growth, feed efficiency, carcass characteristics and bacterial population (*Salmonella* and *E. coli*). Both BMD and virginiamycin significantly increased (P<0.01) the body weight gains as compare to the control and also improve the feed conversion ratio. The carcass characteristics showed the highest edible weight was recorded in treatment IV where virginiamycin @ 500g/MT feed was incorporated (76.86%), followed by treatment III (71.92%), treatment II (71.41%) and the lowest (70.68) in control (T-I). The sample of excreta collected during II, IV and VI week of experiment did not show any incidences of S*almonella* in any treatment groups, however, the excreta of six week in all the treatment groups showed the incidences of *E. coli.*

Keywords : Virginiamycin,Bacitracin Methylene Disalicylate,Broiler ,Growth, carcass characteristics

Introduction

It is well known fact that around 70 percent expenditure in poultry production goes in to feed. To reduce this figure scientist have been trying to improve feed conversion efficiency by using different feed combination and additives (Ishwar, 1979; Wabech and Health, 1982). Feed additives also serve the function of controlling growth inhibiting micro-organisms and promote the growth activities including synthesis of several vitamins and other products beneficial to the host (Dey *et al.*, 1978).

The present study was undertaken to assess the growth promoting activities, of two growth promoters namely bacitracin methylene disalicylate and virginiamycin in the broiler ration. Bacitracin is a polypeptide produced by a strain of *Bacillus subtilis*. It is generally fed in the form of bacitracin methylene disalicylate or zinc bacitracin in broilers diet to promote growth and improve feed utilization. Numerous studies have shown improvement in the rate of growth and feed utilization when bacitracin methylene disalicylate is added to broiler diets (Waldroup *et al.,* 1986). Virginiamycin is an antibiotic produced by mutant strains of *Streptomyces virginiae* (Desomer and Vandijek, 1955).

Material and Methods

Day-old broiler chicks of a commercial strain 72 in number were wing banded and weighted. Each diet was fed with 18 birds divided into 3 replications of 6 chicks in each. The birds were reared in deep litter system of housing.

Treatment I served as control. While treatment II, III and IV were fed experimental diets containing bacitracin methylene disalicylate (BMD) @ 150 g and 200 g/MT and Virginiamycin @ 500g/MT feed, respectively. These drugs were mixed thoroughly in starter and finisher broiler rations and fed to chicks. The chicks were provided the starter broiler ration of the first three weeks, and then the finisher broiler ration was given for the remaining period of the experiment. The composition of ration fed to the broilers is given in Table 1. A Pfizer product, Neftin was also added in all the diets as a common additive to make the diets complete in all respects.

Weekly body weight, feed consumption, feed conversion ratio (FCR) were recorded and excreta were collected on 2nd, 4th and 6th weeks of experimental periods. The bacterial population was counted by as per the method of Quinn *et al.* (1994). At the end of experimental period, two birds from

Table 1: Composition of experimental diets

Ingredient	Starter ration (Parts/100kg)	Finisher ration
Wheat	20.33	23.44
Maize	40.67	46.89
Soybean meal	36.00	26.67
Common salt	0.42	0.42
Mineral Mixture	2.50	2.50
Neftin-200	0.05	0.05
Merivite	0.01	0.01
Meriplex	0.02	0.02
Total	100.00	100.00
1. Crude Protein (%)	22.84	19.95
2. Ether Extract (%)	2.7	3.0
3. Crude Fibre (%)	4.12	4.50
4. Calcium (%)	1.35	1.42
5. Phosphorus (%)	0.91	1.01
6. Gross Energy Mcal/kg	3.97	3.98

each treatment were randomly picked up and slaughtered using the method of Kosher. The different observations of the slaughtered birds recorded were edible, eviscerated, giblet and non edible weights. Statistical analysis of data was done according to Snedecor and Cochran (1980).

Results and Discussion

The body weight, feed consumption, weight gain, feed conversion ratio (FCR) and carcass characteristics of broiler chickens of treated and control group are presented in Table 2. There was a marked increase in body weight gain of the chicken belonging to treatments III and IV as compared to the control and treatment II. The weight gains on the diet containing virginiamycin @500g/MT was highest followed by BMD 200g, 150g/MT and control. These results are in support with the earlier report (Dash *et al.* 1992 and Shen *et al.* 1995). However, certain other worker like Fernandez *et al.* 1973; Waldroup *et al.* 1986 and Waldroup *et al.,* 1990 had the opinion that BMD was better product comparatively a far as growth in broiler chickens is concerned. The highest value of feed consumption was recorded for treatment IV followed by treatment III, II and the lowest consumption was noted in the birds maintained on the control group. The mean values were differed significantly ($P<0.01$). The significant results of FCR were calculated in treatment IV which was followed by treatment III, II and I. These results find support with earlier scientist (Drumev *et al.* 1976; Miles *et al.*, 1984 and Dash *et al.,* 1992) who observed better feed conversion efficiency and feed utilization with virginiamycin, however Fernandez *et al.* (1973), Edgar and Flanagan (1979) reported better FCR and feed utilization with BMD.

The result of this study are reported for Salmonella which is shows that the sample of excreta collected during II, IV and VI week of experiment did not show any incidences of Salmonella in any treatment group. The incidences of *E. coli* where it is clearly seen that there was no infection of *E. coli* in the excreta of II and IV weeks , however the excreta of six week in all the treatment groups shows the incidences of *E. coli*. The highest edible weight was recorded in treatment IV where virginiamycin @500g/MT was incorporated (76.86%) followed by treatment III (71.92%), treatment II (71.41%) and the lowest (70.68%) in control (Group I). Eviscerated weights between T-II and T-III was almost equal, however T-I had lower value (65.71%) and highest for the T-IV (72.10%). It is concluded from the above study that the feed additive virginiamycin was better in overall performance of broiler production compared to BMD.

Table 2: Performance of broiler chickens under different feeding treatment (0-6 weeks)

Parameters	T-I	T-II	T-III	T-IV	SEM±
Weight gain (g)	1204.45a	1253.77b	1351.88c	1486.78d	1.47
Feed intake (g)	2989.78a	3036.14b	3179.0 c	3345.40d	3.39
FCR	2.48a	2.42b	2.35c	2.25d	0.0004
Edible carcass (%)	70.68	71.41	71.92	76.86	-
Non-edible carcass (%)	29.32	28.59	28.08	23.14	-
Eviscerated (%)	65.71	66.50	66.57	72.10	-
Gizzard (%)	2.05	2.17	2.13	2.17	-
Liver (%)	2.37	2.21	2.70	2.03	-
Heart (%)	0.56	0.53	0.52	0.56	-

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OIE looks into veterinary education

Paris, 21/04/08 - The challenges of an evolving veterinary education were at the heart of an informal meeting of the Deans of the most important Veterinary Faculties of the United States of America , Canada and Mexico.

The three days meeting was hosted by the OIE in its Headquarters in Paris, at the specific request of the Deans who consider the World Organisation for Animal Health to be one of the important partners of their activities.

The change in gender and the increase of students choosing a career as urban veterinarians versus rural veterinarians or veterinary public health specialists are among the common challenges the faculties have to face nowadays. Also, accreditation procedures for veterinary universities throughout the world are crucial for the harmonisation of the professional skills needed and for the recognition of the importance of the veterinary profession for the society at international level.

The OIE strongly advocates for its Member Countries and Territories to strengthen their Veterinary Services as guarantors of animal health and, by association, of public health. Their performance is directly linked to their quality and thus to their appropriate education and training.

“The OIE has undertaken to produce international standards on the quality in governance of national Veterinary Services and this process cannot leave aside initial and continuous veterinary education”, said OIE Director General, Dr Bernard Vallat in his welcome address. “To host such a high level meeting here at our Headquarters is of great value for OIE’ s work and is something that I am personally very grateful for”, he added.

The meeting was the opportunity for the Deans to exchange views on academic courses, especially those oriented to epidemiology and to international careers where it was commonly felt that there was a huge gap to be filled. They also highlighted the need at global level to designate a body able to provide global basic requirements for veterinary education leading to the harmonisation of the skills of veterinarians worldwide. Participating in the discussions, Dr Vallat called on the Dean’s attention to a conference that the OIE would organise next year on the topic.

“Evolving veterinary education for a safer world” is an international conference which will take place at OIE’s Headquarters in Paris from 12- 14 October 2009 . The main purpose is to reach consensus in order to recommend to the international veterinary community a new veterinary curriculum. This should ensure that future graduates are increasingly able to work in an international environment applying OIE standards for disease surveillance, veterinary public health, food safety and animal welfare.