http://www.pjbs.org

PJBS

ISSN 1028-8880

Pakistan Journal of Biological Sciences

ANSInet
Asian Network for Scientific Information
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan

Pakistan Journal of Biological Sciences 7 (2): 201-202, 2004
ISSN 1028-8880

Role of Bio-mix in the Growth Performance During Bacterial Enteritis in Broiler Chickens

Kishwar Sultana, [1]Tarriq M. Chaudhry, Shahid Mahboob and [1]Asma Ashraf
Department of Zoology, Government College University Faisalabad, Pakistan
[1]Nuclear Institute for Agriculture and Biology, P.O. Box 128, Jhang Road, Faisalabad, Pakistan

Abstract: Bacterial enteritis induced by oral administration of 2 ml *E.coli* and *Salmonella typhi* suspension (10^9 organisms ml^{-1}) showed negative effect on the growth rate of broiler chicks and 140 ml bacterial suspension was also mixed in drinking water. Bio-Mix (a herbal extract of A.B. Pharma) was used against bacterial enteritis, after 24 h @100 gm/50 kg feed for 7 days controlled the disease, i.e. loose dropping, less feed intake with reduced growth rate was found in diseased birds as compared to treated (Bio-Mix) and control. It was observed that the diseased birds showed loose dropping and less feed intake. The weekly weight gain record showed significantly ($P<0.05$) reduced growth rate as compared to healthy birds.

Key words: Poultry, enterobactereaceae, *E. coli, Salmonella typhi*, bacterial enteritis

INTRODUCTION

Poultry industry plays a vital role in the economy of Pakistan. It has emerged as a check and balance for stabilizing the price of beef and mutton (0.32 million tones poultry meat per annual). According to Gallop survey report poultry meat consumption in Pakistan was 14% in 1986 that showed a remarkable increase up to 59% in 2000[1]. Upto 1999-2000 more than 15000 layer/broiler breeding farms are present in Pakistan[2] which annually produce 0.32 million tons of poultry meat and 8601 million eggs. However poultry enterprises have suffered from many set backs particularly due to prevalence of various diseases, including bacterial enteritis, maycotoxcosis, Newcastle disease etc.

Bacterial enteritis caused by *E. coli* and *Salmonella* affect the birds of any age group and cause inflammation in mucosa and duodenum and adjoining parts of small intestine[3]. According to Qureshi[4] infection with genus *Salmonella* are responsible for a variety of acute and chronic diseases in poultry. These *E. coli* and *Salmonella are* one of the major enemies of poultry and cause a great loss to farmers due to decrease in feed conversion efficiency and reduction in growth rate. Wilson[5] purposed that poultry enteritis a serious disease. The affected flock showed 100% morbidity and about 50% mortality between the ages of 2-4 weeks.

There are many antibiotics and a variety of growth promoting agents such as aroparcin and penicillin, which were used against these bacteria[1]. In this experiment we used a latest feed additive Bio-mix to counter negative effects during bacterial enteritis caused by *E. coli* and *Salmonella*. Bio-Mix is a product of A. B. Pharma Composed of *Tinospora cordifolia* based multi-herb extracts containing physotanic acid, carvacrol and unidentified growth factor (UGF).

MATERIALS AND METHODS

The following scientific study was conducted in the poultry laboratory of NIAB Faisalabad. For the experiment 90 chicks of one-day age were procured and kept under experimental conditions on measured quantity of feed and adlibitum water. All the birds were vaccinated against ND, IBD and Hydropericardium diseases as per schedule. When the chicks were of 14 days, they were randomly divided into three groups A, B and C each group having 30 chicks. The chicks of group A and B were inoculated with 2ml of bacterial suspension having 10^9 organisms of pathogenic *E. coli* and *salmonella typhi*/ml. When the chicks were of 15 days old group A was treated with Bio-mix @ 2 gm kg^{-1} feed for 7 days. Group C was kept as control.

The birds of all experimental groups were kept under identical conditions. The management, medication vaccination, feed, water and other parameter were also identical. The house temperature ranged between 28–37°C. Calculated amount of feed was given to each group. After the induction of bacterial entireties the chicks were kept under observation for color and condition of dropping in each group daily. The feed intake by all the experimental groups was recorded by giving them calculated amount of feed daily and subtracting the waste feed. In order to obtain live body weight 10 chicks

Corresponding Author: Tarriq M. Chaudhry, Nuclear Institute for Agriculture and Biology, P.O. Box 128, Jhang Road, Faisalabad, Pakistan

from each group were randomly weighted weekly. The data of all the experimental groups was tested by analysis of variance and differences in various treatment groups were worked out by using LSD test at ($P<0.05$).

RESULTS

The results of the study confirmed that there was no significant difference in feed intake in any group through out the experiment. It was observed that the birds of group A and C efficiently completed their feed as compared to diseased birds of group B. The birds of group B took a long time to finish their feed. The average live body weight of day old chicks was 50-60 g. In the 1st and 2nd week of experiment the total live weight in all the three groups was same that was 153-356 g, respectively. When the chicks were challenged with experimentally induced bacterial enteritis, the birds of group B showed highly significant reduction in their live body weight (Table 1).

After 22 days of age the mean live body weight in group A, B and C was 757.67±4.04, 723.33±6.11 and 751.00±3.61 g, respectively. When the chicks were 29 days old the mean body weights of group A, B and C remained as 1097.67±2.52, 999.33±8.14 and 1035.0±21.79 g, respectively. At the age of 36 days the mean live body weight in group A was 1410.0±2.0, 1386.67±7.64, in group B and 1398.33±7.64 g in group C. These figures increased to 1930±10.00, 1880±8.12 and 1910±20.11 g in group A, B and C, respectively on the 43 days of age All birds showed an equal increase in the body weight before the chicks were challenged with experimentally induced bacterial enteritis. The diseased birds showed a significant reduction in body weight while the treated birds have yielded higher average live body weight compare to that of control birds the average values of weekly weight gained by 3 experimented groups (Table 2).

It was also observed during the experiment that the treated birds remained healthy like the control birds. Only one or two birds showed loose dropping after 72 hrs of infection and recovered within two days. While in group B there was loose dropping in almost 70% of chicks after 48-72 hrs of infection. The birds were giving dirty look and the color of dropping was greenish.

Table 1: Feed Intake (kg)

Age	Group A	Group B	Group C	Prob.
8 days	10.5±0.76	10.5±0.53	10.5±0.55	NS
15 days	13.0±2.10	13.0±2.12	13.0±1.06	NS
22 days	18.7±1.14	17.0 ±0.72	18.2±1.22	NS
30 days	18.5±0.33	16.5±0.02	18.6±2.61	NS
36 days	13.5±0.12	12.8±1.14	13.0±1.79	NS
43 days	14.0±1.01	14.0±0.96	14.0±0.18	NS

Table 2: Growth rate (g)

Age	Group A	Group B	Group C	Prob.
8 days	151.0±1.73	153.0±3.00	153.0±5.77	NS
15 days	356.7±6.11	356.0±10.15	356.8±5.13	NS
22 days	757.7±4.04	723.33±6.11	751.0±3.61	0.0002**
29 days	1097. 7±2.52	999.33±8.14	1035.0 ±21.79	0.0003**
36 days	1410.0±2.00	1386.7±7.64	1398.3±7.64	0.0119**
43 days	1930±10.00	1880±8.12	1910±20.11	0.0087**

NS = Non significant * = Significant
** = Highly significant

DISCUSSION

Calculated amount of feed was given to every group of experimental birds, twice a day. The control and Bio-Mix treated birds efficiently completed their feed, whereas the birds of group B that were challenged with pathogenic bacteria had slow rate of feed intake. Similarly Wilson[5] pointed out that the feed gain efficiency decreased during the necrotic enteritis due to the loss of appetite. Necrotic enteritis causes mortality in rapid growth phase ad thus leads to the loss of birds[6]. Before the inoculation of bacterial enteritis growth rate was almost same in all the experimental groups. From the age of 22 days up to the 43 days, the birds of group B showed a significant decrease in growth rate as compared to treated birds of group A and control group C (Table 2).

After the induction of bacterial enteritis, the diseased birds had loose dropping and gave a dirty look. In contrast one or two birds in group A, treated with Bio-Mix, after the inoculation of bacteria showed loose droppings. According to Chauhan[3] *E. coli* caused diarrhea in chickens, which indicate a problem in intestine due to which the intestine cannot perform, its proper function.

So it can be suggested that utilization of Bio-Mix is of considerable interest as it promotes the growth of broilers and improves the efficiency of feed conversion even if the chicks are challenged with E.coli and Salmonella. Bio-Mix is a natural metabolite and easily become involved in metabolism. It is not accumulated in the tissues, hence is harmless to the poultry.

REFERENCES

1. Anonymous, 2000. Nutrition and Avian Health. Poul. Intl., 39: 26-30.
2. Chauhan, Sushovan and H.V.S. Roy, 1996. Bacterial diseases. Poultry Diseases, Diagnosis and treatments. 2nd Ed. New Age Int. (P) Ltd. Publishers, New Dehli, India, pp: 40.
3. Richard, K., B.W. Gast, Culnek, H. John Barnes, C.W. Beard, W.M. Reid and H.W. J.R. Yoder, 1997. *Salmonella* infections. Disease of poultry. 10th Ed. Lowa State University Press, Ames, Lowa, USA., pp: 81.
4. Qureshi, M.A. and F.W. Edens. 1997. Immune system dysfunction during exposure to poult enteritis and mortality syndrom agent. Poul. Sci., 76: 564-569.
5. Wilson, J., 1998. Latest thinking on necrotic enteritis. Int. Poul. Pro., pp: 4-5.
6. Stephen, A. Lister, 1997. Nectoric enteritis. Poul. Int., 36: 42.