Effect of probiotic supplementation on broiler performance at starter phase

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ABSTRACT: A study was conducted to determine the effect of probiotic on performance of broilers chickens at starter phase. In completely randomized design with 4 treatments ( 0 , 0.5, 1, and 1.5 dose of probiotic levels )¹ and 5 replicates of 12 birds each 240 day-old mail Hubbard Classic broiler chickens with the average weight of 42±2 gram, chickens were placed in 1 × 1.2 m pens for 21 days. Both feed and water provided ad libitum. the probiotic used was a commercially prepared contained streptococcus and bifidobacterum. Feed intake and body weight gain recorded weekly. Feed intake was not affected by treatment at 21 days of age. Body weight and feed to gain ration at 0-21 days of age were significantly (p<0.05) improved by treatments. Under the condition of this experiment probiotic levels added to the drinking water improves body weight and feed efficiency at 21 days of age days of age.

Key words: Broiler, Performance, Probiotic, Starter phase

INTRODUCTION

There is a worldwide attempt to reduce antibiotic use in animal production because increased microbial resistance to antibiotic and residues in animal products can be harmful to consumers (Yeo et al, 1997). Thus, a product similar to antibiotics which maintain good health, improving weight gain and feed conversion ratio in broilers without any residue in the meat is highly desirable in broiler production (Ramlah et al 1995). Probiotics are one of the feed additive; which are the live culture of useful micro-organisms like Lactoobacillus acidophillous, Bifidobacterium thermophilum and Bacillus subtilis (Rahman et al, 2007). It is well recognized by this time that the probiotics are live micro organisms and when administered through the digestive tract, cause a positive impact on the host’s health (Pish Jang , 2011). Healthy animals generally maintain a balanced microbial population that plays an important role in the growth and health of animals (Ahmad ,2006). Some studies show that probiotics supplementation in feed of chickens improves the performance and it has been reported probiotics were the most effective growth promoter (Hosseini Mansoub, 2011). For example intestinal bacteria metabolize nutrients in the contents and produce short chain fatty acids and lactic acid, and synthesize some vitamins. Some of these activities can be beneficial to host animals (Ahmad, 2006). The objective of the present study was to determine the effect of the probiotic on performance of broiler chickens at the starter phase.

MATERIAL AND METHODS

A total of 240 one day-old mail Hubbard Classic broiler chicken were randomly into 5 replicates of 12 birds with a same weight average about (42±2 g) have been experimented, each of four level of probiotic ( 0 ,0.5 , 1 and 1.5 dose ) added to drinking water were given to the chicken four 21 days. Both feed and water provided ad libitum .the probiotic used was a commercially prepared contained streptococcus and bifidobacterium. A basal diet was formulated and considered according to recommendation of NRC 1994(table 1). Feed intake, live weight gain and feed conversion ratio calculated for each week. Data were analyzed using the General Linear models procedures of SAS 2001.
Table 1. Basal composition and analyzed results of the experimental diets

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>0 to 21 d</th>
<th>21 to 42 d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn (%)</td>
<td>59.5</td>
<td>49.22</td>
</tr>
<tr>
<td>Wheat (%)</td>
<td>-----</td>
<td>16.22</td>
</tr>
<tr>
<td>Soybean mail (%)</td>
<td>30.59</td>
<td>28.75</td>
</tr>
<tr>
<td>Fish meal (%)</td>
<td>4.58</td>
<td>-----</td>
</tr>
<tr>
<td>Oil (%)</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>Lime stone (%)</td>
<td>1.01</td>
<td>1.08</td>
</tr>
<tr>
<td>Dicalcium phosphate</td>
<td>0.87</td>
<td>1.08</td>
</tr>
<tr>
<td>Salt (%)</td>
<td>0.27</td>
<td>0.3</td>
</tr>
<tr>
<td>Vitamin mix (%)</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>Mineral mix (%)</td>
<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>DL-methionine (%)</td>
<td>0.18</td>
<td>0.07</td>
</tr>
</tbody>
</table>

Calculated value

- ME, Kcal/Kg: 3000
- Crude protein, %: 21.56

RESULTS AND DISCUSSION

Feed intake

The results of feed additive on broiler performance are presented in table 2. During growing period, feed intake was not affected by treatment. Although there was no difference on feed intake between treated birds and control birds but feed intake was the lowest for the chicks fed high level of probiotic as compared to the other groups. It was hypothesized that using probiotic in the experimental diets would not only enhance the digestive rate, but also increase the nutrient retention and decrease their passage rate as undigested. Because of secreting energy nutrients hydrolyzing enzymes from the microbes present in probiotic, which would reduce the feed intake comparing control (Rahman et al., 2009).

Body weight gain

Average weight gain was increased (p<0.05) by feeding the diet containing 1.5 dose of probiotic during the first 3-wk period. These results are in agreement with the finding Yeo and Kim (1997) who reported that average daily weight gain of chickens fed probiotics was significantly increased during the first 3-wk of growth. Improvement in body weight could be ascribed to improve digestion and absorption of nutrient in the digestive tract (Ramlah et al. 1995). It was hypothesized that the increasing level of probiotic would consistently increase the body weight gain of the experimental birds. Because the microbes present in probiotic would secrete amylase, protease and lipase, which would enhance the catalytic activities of the endogenous enzymes to liberate more energy from hydrolyzing the energy feed nutrients. Such higher quantity of liberated energy would help to improve body weight gain of the chicken fed probiotic added rations as compared to the chicks fed the rations containing no probiotic. The above hypothesis was found to be true, because the body weight gain of the experimental birds was increased with increasing level of probiotic in the experimental diets (Rahman et al., 2009).

Feed conversion ratio

However feed conversion ratio (FCR) was significantly improve (p<0.05) in chicken which had received probiotic supplement diet from third weeks of age. Feed conversion ratio (FCR) was significantly lower (p<0.05) in chicks which had received probiotic supplemented diets from first 3-wk period as compared to the control. These results are in agreement with the finding of Yeo and Kim (1997) who reported that the use of probiotic in broiler chick diet significantly improved feed efficiency. The improved (FCR) might be due to maintaining normal intestinal micro flora by competitive exclusion and antagonism, altering metabolism by increasing digestive enzyme activity and improving digestion rate of energy nutrients (Rahman et al., 2009).

In conclusion, under the condition of this experiment probiotic levels added to the drinking water improves body weight and feed efficiency at 21 days of age days of age.
REFERENCES

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