



EFFECT OF PROBIOTIC SUPPLEMENTATION ON GROWTH PERFORMANCE DURING BROODING IN PALLISHREE BIRDS

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ABSTRACT

A study was conducted to assess the effect of supplementation of Hiprofit (a probiotics preparation) in drinking water on the performance of Pallishree chicks. In this study, 280 Pallishree birds were used. Birds were divided in to two groups. A basal diet was formulated and considered as control for brooder (0-8wks) diets. From day 1 to 56 of the study, water and experimental diets were given to the birds, *ad-libitum*. In the treatment group birds were provided with probiotic supplementation (Lypholised Lactobacillus) @ 2 gm per 5 lit of drinking water. The body weight of birds was taken weekly. It was concluded that supplementation of probiotics (Hiprofit) @ 1.5 g/5 L of drinking water was beneficial in terms of higher body weight gain and better nutrient utilisation.

KEY WORDS: brooding, growth, Pallishree, probiotic.

INTRODUCTION

The conversion of feed into meat plays a very important role in the efficiency of poultry industry. There is also concern of disease outbreak and mortality in poultry birds which are reared intensively or are given less care when reared under back yard system. From the disease point of view, there is increasing concern regarding antibiotic resistance. One alternative is feeding direct microbials (DFM), which are also called as probiotics, which are live microbial feed supplements that beneficially affect host animal by improving its intestinal health. (Fuller, 1989). To avoid the problem of antibiotic resistance, probiotics were introduced as an alternative in poultry production and have become an area of great interest. Probiotics are also used to lower the disease susceptibility and improves the health of gastrointestinal tract which ultimately results in increased production performance of birds. Various findings on the effect of different probiotics on the health and growth responses of broiler chickens was reported (Kabir et al., 2004; Piray et al., 2007). The aim of this study was assessing the effects of the, probiotic supplementation on body weight gain and mortality in backyard poultry birds. The most common routes of administering probiotic preparations are through feed and

drinking water Addition of probiotics in drinking water at a rate of 1.5 g/5 L has been reported to improve live weight gain in Gramapriya chicks (Swain *et al.*, 2011). Dietary supplementation of *Lactobacillus sporogenes* at 100 mg/kg diet increased body weight gain, improved feed efficiency and humoral immune response in broiler chicks during 0-6 weeks of age (Panda *et al.*, 2005).

MATERIALS & METHODS

Birds and housing

In this study, 280 Pallishree birds were used. Birds were divided in to two groups. A basal diet was formulated and considered as control for brooder (0-8wks) diets. From day 1 to 56 of the study, water and experimental diets were given to the birds, *ad-libitum*. In the treatment group birds were provided with probiotic supplementation (Lypholised Lactobacillus) @ 2 gm per 5 lit of drinking water. The body weight of birds was taken weekly. The data were analyzed statistically (Snedecor and Cochran, 1989).

RESULTS & DISCUSSION

The weekly mean body weight (g) of birds during brooding (0-8 weeks) is presented in table 1.

TABLE 1: Weekly mean body weight (g) of birds during brooding (0-8 weeks)

Age (weeks)	Control	Treatment	Remark
Day old	37.82±1.32	38.64±1.32	NS
1 st	77.88 ^a ±1.52	94.82 ^b ±0.65	**
2 nd	207.06 ^a ±7.20	257.09 ^b ±1.53	**
3 rd	410.00 ^a ±5.51	443.77 ^b ±6.95	**
4 th	560.96 ^a ±7.61	688.34 ^b ±16.55	**
5 th	855.48±20.42	928.01±18.91	NS
6 th	1062.55±12.23	1112.67±31.15	NS
7 th	1144.93±28.64	1164.22±21.84	NS
8 th	1241.45±23.01	1288.97±0.71	NS

Means bearing different superscript in the same row differ significantly.

** P 0.01, *P 0.05, NS-Non significant

The day old body weight of birds ranged from 37.82±1.32 to 38.64±1.32g. The statistical analysis revealed that there was no significant difference in the day old body weight of birds under treatment and control indicating uniformity of birds and the increase in growth rate in subsequent periods among different treatments might not be contributed by the difference in initial body weight. The live weight of birds under control and treatment increased steadily up to 8 weeks of age on advancement of age, reaching the lowest body weight of 1241.45±23.01g in control and highest body weight of 1288.97±0.71g in treatment group.

The findings are in agreement with that of Kaoud, 2010, who concluded that supplementation of probiotic mixture (*Lactobacillus sporogenes*, *Lactobacillus acidophilus* and *Saccharomyces cerevisiae*) @ 0.5 g/ kg feed improved growth, feed conversion ratio and carcass traits in broilers. The reason for better body weight gain and feed conversion has been attributed to improve gut health leading to enhanced digestion, absorption and utilization of nutrients. The weekly mean body weight (g) gain of birds during brooding (0-8 weeks) is being presented in table 2.

TABLE 2: Weekly mean body weight (g) gain of birds during brooding (0-8 weeks)

Age (weeks)	Control	Treatment	Remark
1 st	40.06 ^a ±2.53	56.18 ^b ±1.29	**
2 nd	129.18 ^a ±8.23	162.27 ^b ±2.12	**
3 rd	202.94±4.36	186.66±4.47	NS
4 th	150.96 ^a ±5.57	244.57 ^b ±8.59	*
5 th	294.52±8.47	239.67±11.88	NS
6 th	207.07±11.43	184.66±12.23	NS
7 th	82.38±5.41	51.55±8.87	NS
8 th	96.52±10.49	124.75±7.18	NS

Means bearing different superscript in the same row differ significantly.

** P 0.01, *P 0.05

There was a significant difference ($P \leq 0.01$) in the body weight of birds between control and treatment starting from 1st week to 4th week of age. The weekly mean body weight gain was significantly ($P 0.05$) higher in treatment than control during 1st, 2nd and 4th week of age. The superiority in growth rate of birds in treatment compared to control might better utilisation of nutrient in the diet which might have contributed to higher growth rate. Similar findings are reported by Karimi Torshizi *et al.*, 2010, who stated that performance of broilers in terms of body weight gain, feed intake and feed conversion ratio improved when probiotics was provided through drinking

water compared to the control and probiotics added groups. Supplementation of 2-3 mL of probiotics Protexin/L in drinking water improved the performance, blood biochemistry and immunity against disease in crossbred cockrels (Khan *et al.*, 2013). Similarly, probiotics administration in drinking water improved growth as reported by earlier workers at different concentrations of 3 ml/L (Khan *et al.*, 2013), 0.5 g/L (Karimi Torshizi *et al.*, 2010), 0.2 g/L (Islam *et al.*, 2004), 2 mL/L (Amar and Khan, 2012). The cumulative body weight (g) gain of birds during brooding (0-8 weeks) is presented in table 3.

TABLE 3: Cumulative body weight (g) gain of birds during brooding (0-8 weeks)

Age (weeks)	Control	Treatment	Remark
0-1	40.00 ^a ±2.56	55.45 ^b ±1.29	**
0-2	169.44 ^a ±11.47	218.41 ^b ±4.75	**
0-3	372.18 ^a ±8.70	405.83 ^b ±9.81	*
0-4	523.14 ^a ±11.43	649.78 ^b ±11.16	*
0-5	817.62 ^a ±8.86	889.37 ^b ±11.55	*
0-6	1112.18±8.15	1074±13.07	NS
0-7	1194.56±9.56	1258.69±11.33	NS
0-8	1291.08±11.02	1383.44±9.01	NS

Means bearing different superscript in the same row differ significantly.

** P 0.01, *P 0.05.

There was a significant difference ($P \leq 0.01$) in the cumulative body weight gain of birds during 0-5 week of age in between treatment and control group. There was a typical trend of significantly higher body weight gain of birds in treatment compared to control up to 5 weeks of age. The differences in cumulative body weight gain of birds under different treatments were found to be non-significant from 6 to 8 week of age. The cumulative body weight gain of birds during 0-6, 0-7 and 0-8 weeks of age was having higher value in treatment compared to control although the differences were statistically non-significant. The cumulative body weight gain was significantly higher in treatment (649.78 ±11.16g) than control (523.14±

11.43g) during 0-4 weeks of age. The bacteria used must be able to survive and later colonise the gastrointestinal tract so that beneficial effects could be achieved. The bacterial spp. have a strong ability to attach to the intestinal epithelium of chicken (Jin *et al.*, 1996 a), are resistant to the bile and acidic conditions and are able to antagonize and competitively exclude some pathogenic bacteria *in vitro* (Jin *et al.*, 1996 b). Mechanisms by which probiotics improve FCR include alteration in intestinal flora, enhancement of growth of non-pathogenic facultative anaerobic and gram positive bacteria forming lactic acid and hydrogen peroxide, suppression of growth

of intestinal pathogens and enhancement of digestion and utilization of nutrients (Yeo and Kim, 1997).

CONCLUSION

It was concluded that supplementation of probiotics (Hiprofit) @ 1.5 g/5 L of drinking water was beneficial in terms of higher body weight gain and better nutrient utilisation.

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