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Effects of synbiotics, probiotics & oxytetracycline on the performance of broiler

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ABSTRACT

A study was conducted to determine the effects of Poultry star sol (Synbiotic), Protexin (probiotic) & Renamycin (oxytetracycline) on the performance and carcass quality of broilers. The experiment was done at a private poultry farm located at Bogra district with commercial cobb- 500 broiler for aperiod of 5 weeks. A total one hundred ninety two (192) straight-run day-old commercial broiler chicks were randomly divided into four dietary treatment having 4 replicates. The number of birds in each treatment was 48 while in each replicate 12. The birds were fed synbiotics, probiotics & oxytetracycline at dietary levels mixed with feed. More improvement was observed in body weight gain of broiler chicks at 35 days for 50g, 10g and 10 g/kg groups, although body weight gain, feed intake and feed conversion of broilers differ significantly ($P<0.05$)) compared to control group. Diet had no significant effect on livability ($P>0.05$). The performance index and production number also vary significantly as compared to control ones ($P>0.05$). The supplementation of synbiotics, probiotics & oxytetracycline in broiler diets was effective in reducing abdominal fat deposition ($P>0.05$) but had no significant effect on other meat yield parameters of broilers. The addition of probiotics in the diet of broilers at the levels studied could not aid in economizing broiler production. It was concluded that Synbiotics could show beneficial effects on performance of broilers at the level tested and very effective in reducing abdominal fat. It was further concluded that probiotics could show beneficial effects on performance of broilers at the level tested less than synbiotics but more than oxytetracycline.

Introduction

Broilers are young chickens of either sex tender meated with soft pliable smooth textured skin and flexible breast bone cartilage. It is known as a live machinery for quick return to edible meat and it can produce animal protein in the quickest possible time. Broiler industry is playing a greater role in agricultural economy. It gives maximum return with reasonable expense. It can be mentioned here that small area land can be well utilized for commercial broiler farming in a thickly populated country like Bangladesh. So, there is a wide scope for raising broiler production in Bangladesh. Broiler production is important in Bangladesh to meet up the protein requirements of the people. Poultry meats and eggs contribute approximately 37% of total animal protein in the country. There is a great possibility of growth and expansion of this sector both domestic and commercial level. This is justified by the fact that farmers of this country are becoming more interested in broiler farming the last two decades. It provides a large part of increasing demand for animal protein, cash income and create employment opportunities of the people.

Synbiotics refer to nutritional supplements combining probiotics and prebiotics in a form of synergism, hence synbiotics. Probiotics are live bacteria which are intended to colonize the large intestine and confer physiological health benefits to the host. A prebiotic is a food or dietary supplement product that confers a health benefit on the host associated with modulating the microbiota. Prebiotics are not drugs, not functioning because of absorption of the component, not due to the component acting directly on the host, and are due to changes to the resident bacteria – either changing the proportions of the resident bacteria or the activities thereof. Measurable changes to the microbiota in the absence of a desirable physiological consequence in the host does not qualify as a prebiotic. A prebiotic may be a fiber, but a fiber is not necessarily a prebiotic.

Using prebiotics and probiotics in combination is often described as synbiotic, but the United Nations Food & Agriculture Organization (FAO) recommends that the term "synbiotic" be used only if the net health benefit is synergistic. Probiotic bacteria may colonise the upper part of the intestine to avoid the adhering of pathogens to the intestinal tract and may help in digestion. A prebiotic is a fiber such as fructose oligosaccharide, galactose oligosaccharide, etc., and is consumed that is intended to stimulate the microflora in the large intestine. The combination thus works separately in the small and large intestine, but synergistically as they increase the overall gut health. A common mistake is to require that the prebiotic be shown to increase the population and/or function of the probiotic it is paired with, as the probiotic is an external species, whereas prebiotics stimulate the flora which is already present.

Probiotics are specific chemical agents produced by microorganism containing *Lactobacillus acidophillus*, *Lactobacillus casi*, *Bifidobacterium bifidum* and *Aspergillus oryazae etc*. Fuller (1989) redefined probiotics as "A live microbial feed supplement which beneficially affects the host birds by improving it intestinal microbial balance. A probiotics is a microorganism or combination of microorganisms supposed to selectively suppress the harmful bacteria in the gut of the living beings". Probiotics also contain other substances to improve the intestinal microbial balance.

Antibiotics have been used in animal feed for about 50 years ever since the discovery not only as an anti-microbial agent, but also as a growth-promoting agent and improvement in performance. Tetracyclines, soon began to be common additives in feed for poultry. The benefits of antibiotics in animal feed include increasing efficiency and growth rate, treating clinically sick animals and preventing or reducing the incidence of infectious disease. By far the major use of antibiotics among these, however, is increased efficiency, i.e. a more efficient conversion of feed to animal products, and an improved growth rate. In chicken feed, for example, oxytetracycline show substantial improvement in egg production, feed efficiency and hatchability, but no significant effect on mortality. oxytetracyclin also show an improved growth rate, but little effect on mortality. Antibiotics in animal feed, in general, are used regularly for increased efficiency and growth rate than to combat specific diseases. The present study was undertaken to know the effect of feeding synbiotics (Poultry star sol) probiotic (protexin) oxytetracycline (Renamycin) on the performance of broilers and the cost involved with them.

Materials and Methods

Statement of the research work

To investigate the influence of a synbiotic in the diet of broiler chicks, age 35-day feeding trial with 192 day-old Cobb-500 broilers was conducted in summer season at Bogra Sadia Agro village Pvt. Ltd. The trial period continued from 24 April to 28 May, 2014.

Preparation of the experimental house and equipment

An open-sided house with one rooms was used for rearing the experimental birds. Experimental room was partitioned into 16 separate pens of equal size by using wire net and bamboo materials. The experimental rooms (ceiling, Floor and wire net) were properly brushed with broom and then washed and cleaned by forced water using a hosepipe. After washing with clean water, the room was disinfected by bleaching powder solution. Then the room was left vacant for 15 days. Later, the room was again disinfected with virkons (Antec International Limited, England) and kept free to dry up properly. At the same time, all feeders, waterers and other necessary equipment were also properly cleaned, washed and disinfected with bleaching powder solution, subsequently dried and left them empty for one week before the arrival of chicks. Ceiling, walls and wire net were also thoroughly disinfected by diluted virkons solution @ 10 g per 1 liter water. Three days before the arrival of chicks, the rooms were enclosed with curtains made of jute materials and fumigated with potassium permanganate and formalin at double strength (2x). For 100 cubic feet area a mixture of 35g potassium permanganate and 70cc formalin, which is equal to double strength, was used for fumigation. The room was fumigated for a period of 48 hours to destroy pathogenic bacteria and virus. The fumigation was started in 22ndApril at 4.00 pm and it was continued up to 23rd April 2014. The room was opened fully for proper aeration in 24th April 2014 at 4.00 am before 24 hour of the arrival of chicks. The chicks were allocated in the room on 25th April 2014, at 7.00am.

Collection of the experimental birds

One hundred Ninety two straight-run day-old Cobb-500 broiler chicks were procured from Rangpur Hatchery of Nourish Poultry & Hatchery Ltd.

Layout of the experiment

The day-old Cobb-500 broiler chicks were distributed at random into 4 dietary treatments, having 4 replicates in each treatment. The chicks were randomly picked up from chick boxes and allocated to respective replicate pens. There were 12 chicks in each replication. T_1 = Control i.e. without medication in drinking water; T_2= 50 gram synbiotic per 100 kg feed; T_3 = 10 gram probiotic per 100 kg feed and T_4 =10 gram oxytetracycline per 100 kg feed

Feed ingredients and preparations

Required feed ingredients for making experimental diets were procured from the local market of Bogra town. During procurement, ingredients were evaluated carefully for their freshness by observing its color with naked eye and smell with nose. The commercial synbiotic preparation of "poultry star sol and oxytetracycline (Renamycine) "Compounder Animal Feed Premix" (Renata Animal Health Ltd) and probiotic preparation of "protexin "Compounder Animal Feed Premix" (Novartis Animal Health) were kindly provided.

The experimental diets were divided into three phases (broiler-starter, broiler-grower and broiler-finisher). All the diet was provided according to the manufacturer instructions. Broiler starter diet was provided between 0 and 14 days, broiler-grower phase consists of 15 to 28 days and the remaining period was broiler finisher ranging from 29 to 35 days. The experimental diets were purchase from local market (Nourish® feed). The feed ingredients were mixed thoroughly and properly with synbiotics. The required amount of probiotics was weighed treatment-wise and it was then mixed with a small quantity of the previously weighed mixed feed and the quantity was increase gradually by adding

remaining feed. Poultry Star sol was added to control diet at required amount according to each treatment. The birds were exposed to similar standard care and management in all treatment groups throughout the experimental period. The experimental birds were vaccinated to prevent Newcastle Disease and Infectious Bursal Disease (Gumboro).

Postmortem examination of birds

Dead birds were diagnosed tentatively. After postmortem examination, the results were collected and necessary measures were taken to remove the problem without applying medicines.

Processing of broilers

The processing of broilers was done according to the procedure of Jones (1982). At the end of trial the weight of the birds was taken and average body weight was calculated. At 35 day of age, two birds weighing average from each pen (replication) were randomly selected for determining meat yield. To facilitate slaughter, all birds from each treatment group were kept without feed for 12 hours prior to killing, but water was supplied *ad libitum.* The birds were slaughtered and allowed to bleed for 2 minutes. After complete bleeding, birds were weighed individually. Then they were immersed in hot water (51 to 55^{o} C) for 120 seconds for proper defeathering of carcass. The feathers were removed manually (by hand) and the birds were again individually weighed. Finally, processing was performed by removing head, shank, viscera, oil gland, kidney and giblets. As soon as these were removed, the gall bladder was cut off from the liver and pericardial sac and arteries were cut from the heart. After removal of gizzard from the intestine, it was split open with knife and the fecal materials were removed. Then it was washed with clean water and the lining was removed by hand.

Record keeping

Body weight of chicks was recorded initially and weekly replication wise for each treatment. Feed intake was also recorded weekly replication wise for each treatment. Mortality was recorded daily if death occurred. During the whole experimental period, the temperature of the experimental house and pens were recorded four times a day 6AM, 12PM, 6PM and 12AM with the help of an automatic digital thermometer. The relative humidity was also recorded four times a day by using a hygrometer. The different meat yield parameters like dressing weight, feather weight, liver weight, gizzard weight, heart weight, shank weight, breast meat Weight, thigh weight, drumstick weight, wing weight and dark meat weight for individual bird were recorded after slaughtering.

The weight gain of each broiler was calculated by deducting initial body weight from the final body weight of the birds. Feed intake was also calculated as the total feed consumption in a replication divided by number of birds in a replication. Necessary adjustments were made for mortality. The feed conversion ratio was calculated as the total consumption of feed divided by live weight gain. Performance index was calculated by dividing the live weight by the feed conversion ratio and it was multiplied by 100. Survivability was calculated as the total number of birds survived divided by the total number of birds in each replication and multiplied by 100. The survived birds were calculated by deducting the number of dead birds from the total number of birds. The efficiency of performance was evaluated in terms of production number (PN) according to the method described by Euribrid, 1994.

The cost on Synbiotics, probiotics & oxytetracycline on feed per kg live weight gain and cost per kg dressed weight for each treatment was calculated by calculating the amount of probiotics consumed by a broiler from day-old to marketing and the cost of consumed Synbiotics, probiotics & oxytetracycline was also calculated. Then the cost of Synbiotics, probiotics & oxytetracycline is added with the cost of feed consumed by that broiler curing the same period. The production cost of live broiler was estimated by considering the expenses involved to purchase chicks, feed, Synbiotics, probiotics & oxytetracycline, vaccines, disinfectants, litter and miscellaneous items. Market price of feed ingredients and Synbiotics, probiotics & oxytetracycline is shown in appendix, statistical analysis, data on all meat yield parameters was converted into percentages of respective live weight. The percentage of the weight of different organs of broiler was calculated as follows: Weight of organ/Live weight x 100.

Statistical analysis

Data on performance were statistically analyzed by using analysis of variance (ANOVA) technique by a computer using *SAS* (1998) program in accordance with the principles of Completely Randomized Design (CRD). The meat yield parameters were analyzed by using a 2 (Sex) x 4 (diets) factorial experiment in a CRD. Least Significant Differences (LSD) were calculated to compare variation among treatments where ANOVA showed significant difference at 0.05 level of probability.

Results and Discussion

Performance of broiler

Body weight gain

Initial body weight of day-old broiler chicks fed on standard dietary treatments was similar (P>0.05). From 1 to 21 days of age and also from 1 to 35 days of age, the highest body weight gain was attained in birds that received the Synbiotics at the standard level (50 gram synbiotic per 100 kg feed).Then From 1 to 21 days of age and also from 1 to 35 days of age, the 2nd highest body weight gain was attained in birds that received the probiotics at the standard level (10 gram probiotic per 100 kg feed). Then From 1 to 21 days of age

and also from 1 to 35 days of age, the 3rd highest body weight gain was attained in birds that received the oxytetracycline at the standard level (10 gram oxytetracycline per 100 kg feed). During 22 to 35 days of age50 gram synbiotic per 100 kg feed group gained more weight than that of other treatment groups. However, from 1 to 35 days of age, broiler chicks fed 50 gram synbiotic per 100 kg feed group gained significantly more weight than group consumed diet supplemented with probiotics, Oxytetracycline at 10 g/100 kg feed . There was no significant improvement in treated groups compared to the control in the same period.

Feed intake

The average cumulative feed intake of broiler during the experimental period showed that except during the early period of rearing (1 to 21 days), synbiotics supplemented groups tended to consume higher amounts of feed compared to control one in other stages of age (from 22 to 35 days and from 1 to 35 days). Among different treatments, control group had higher intake than that of other treatment groups from 22 to 35 days of age and also from 1-21 days of age but from 1to 35 days of age control group consumed more feed (3177.5g) followed by 3147.5g, 3024.75g and 2974.75g in oxytetracyclin, Probiotics and synbiotic groups respectively. However, there was no significant difference (P>0.05) between the broilers fed on control diet and diets supplemented with Synbiotics,probiotics & oxytetracycline at standerd levels (50 gram synbiotic per 100 kg feed, 10 gram probiotic per 100 kg feed & 10 gram oxytetracyclin per 100 kg feed). At the end of the trial, the results of feed intake indicated that feed consumption of broilers increased by 3.02, 2.97 and 3.14 % in 10 gram probiotic per 100 kg feed 50 gram synbiotic per 100 kg feed, & 10 gram oxytetracyclin per 100 kg feed group respectively, compared to control group.

Table 1. Effect of supplementation of Synbiotics, probiotic & Oxytetracycline in the diet of broilers on body weight gain, feed intake and feed conversion ratio

Variable	Dietary treatment			
	0 (control)	Syn	Pro	Oxy
Initial body wt (g/ Broiler)	40.5	40.5	40.5	40.5
Body wt gain (g/ broiler)				
1 to 21 days of age	810.5d	967.75a	924.5b	880c
22 to 35 days of age	818c	980a	936.75b	924.25b
1 to 35 days of age	1628.5d	1922a	1861.25b	1804.25c
Feed intake (g/ broiler)				
1 to 21 days of age	1250ab	1161.25a	1245ab	1247ab
22 to 35 days of age	1927.5c	1813.5a	1900ab	1900.5ab
1 to 35 days of age	3177.5d	2974.75a	3024.75b	3147.5c
Feed conversion ratio				
1 to 21 days of age	1.54a	1.19b	1.35c	1.41c
22 to 35 days of age	2.35a	1.85b	2.02c	2.05c
1 to 35 days of age	1.95a	1.55b	1.63b	1.75c

Means within a row with uncommon letter differ significantly (<0.05) and

Feed conversion

The feed conversion in different dietary treatments were very much close with each other in every stages of growth. At the end of the trial i.e. at 35 days of age, the feed conversion was followed by 1.95, 1.55 1.63 and 1.75 in control, Synbiotics, probiotics and oxytetracycline groups respectively. The data pertaining to the feed conversion ratio in standard dietary treatments at different stages of age indicated that addition of synbiotics had significant effect on feed conversion (>0.05) at any stake (Table 1).

Survivability

Survivability of broilers fed on standard dietary treatments was very much acceptable during the study period. The survivability did not vary significantly (P>0.05) among different treatment groups during the whole experimental period.

Performance index

At the end of the feeding trial, the differences in performance indicates varied significantly (P<0.05) among treatments synbiotics, probiotics and oxytetracycline & control groups.

Production number

The data pertaining to the production number (PN) in standard dietary treatments from 1 to 35 days of age indicated that synbiotics groups had higher production numbers similar to control group but other two groups had comparatively lower values. However, small differences in production number revealed no significant.

Meat yield parameters

The effects of diet, sex and interaction of diet and sex on different meat yield parameters are different. The Table indicates that there was no significant difference ($p>0.05$) in the presented weight of different organs and components of broilers except abdominal fat due to addition of synbiotics, probiotics & oxytetracycline in the diet of broiler**.** The differences in the presented abdominal fat of broilers (male & female combined) fed diet-supplemented with synbiotics, probiotics & oxytetracycline varied significantly ($P<0.05$) when compared with the control broiler chicks. There was no significant influence of sex and interaction of sex with diets on the percent weight of different organs of broilers.

Economics of feed cost and income

The mean values on cost of feed due to addition of synbiotics, probiotics & oxytetracycline in relation to per kg live weight and per kg dressed weight are shown in Table 2. It was observed that the cost of synbiotics, probiotics & oxytetracycline supplementation for 1 kg live weight gain varied significantly ($P<0.001$) among different dietary, groups. On the other hand, when cost was calculated for per kg dressed weight, a highly significant increase ($P<0.001$) in the cost of dressed meat production was observed in synbiotics, probiotics & oxytetracycline groups compared to control group. It was also observed that there was a significant difference in the cost of per kg live broiler when compared with the control broiler chicks. Control broiler chicks required heighest cost to produce one kg live broiler as compared to broilers fed diets supplemented with synbiotics, probiotics & oxytetracycline when profit was considered for per kg live broiler, the same trend was observed in different treatment groups. The highest profit was obtained from synbiotics group which was Tk1770.98 followed by Tk. 1349.34 & 821.4 in probiotics & oxytetracycline groups respectively. The profit per kg live broiler from probiotics & oxytetracycline treated groups differed significantly compared to control one ($P<0.001$).

Table 2. Economics of supplementation of Synbiotic, probiotic & oxytetracycline in the diet of broilers

Variable	Dietary treatment (g/100kg)			
	0(control)	**Synbiotics**	**probiotics**	**Oxytetracycline**
Cost of total feed consumed per bird (tk) up to 35 days	142.98b	133.85a	136.11a	141.63b
Cost of sybiotics,probiotics and oxytetracycline. consumed per bird (tk) up to 35 days	-	1.03a	0.92a	0.20b
Cost of sybiotics,probiotics and oxytetracycline + feed consumed per bird (tk) up to 35 days	142.98b	134.88a	137.03a	141.83b
Cost (tk) per kg live broiler	112.09b	90.74a	94.85a	100.52b
Income (tk) per kg live broiler	110a	110a	110a	110a
Profit (tk) per kg live broiler	2.09d	19.96a	15.20b	9.48c

Means within a row with uncommon superscript differ significantly.

The non-significant effect of probiotic on body weight gain was in agreement with the findings of some previous reports (Ergun *el al.,* 2000; Ladukar *et al.,* 2001; Lima *et al.,* 2002; Priyankarage *et al.,* 2003). But these findings contradict the observation of Jin *et al* (2000); Bandy and Risam (2001); Kalavathy *et al.,* (2003) who found that supplementation of probiotics improved live weight gain of broilers. Jin *et al.* (1997) explained that differences in the strains and forms of bacteria used, and concentrations of viable cells could produce discrepancies in results. The effect of probiotics on body weight gain as obtained in this study might be due to some factors that affected the efficacy of probiotic such as composition of diet, stress condition, strain of microbes and concentration of microbes. Higher feed intake in probiotics supplemented groups was in agreement with the results of some earlier studies (Samanta and Biswas, 1995; Panda *et al,* 2000; Ladukar *et al.,* 2001; Lima *et al.,* 2002). In those studies, feed intake of different broiler groups did not differ significantly due to addition of probiotics. However, contrary to these observations, some workers have found that feed consumption differed significantly between the control and probiotic fed groups (Mahajan *el al.,* 1999; Zulkifli *et al.,* 2000; Bandy and Risam, 2001). Mahajan *et al.* (1999) reported that the higher feed consumption in probiotic supplemented group might be due to an increase in digestive efficiency. Mohan *et al.* (1996) also indicated that probiotic supplemented diets

improved the feed intake irrespective of seasons. The higher amounts of feed consumption although not significant as found in the present study might be due to increased appetite and rate of enzymatic activity which enhances the digestive efficiency of broilers. The non-significant effect of probiotic on feed conversion was in close agreement with the observations of some workers (Mohan *et al.,* 1996; Yeo and Kim 1997; Lima *et al.,* 2002; Priyankarage *et al.,* 2003). In consistent with this result, Ergun *et al* (2000) reported that supplementation of probiotics with or without antibiotic in the rations had no significant effect on feed conversion of broilers. In contrast, broilers fed, Biospur (Bandy and Risam, 2001), Lacto-Sacc (Mahajan *et al.,* 1999), *Lactobacillus* cultures (Zulkifli *et al.,* 2000) and Pronifer or Biogen (Shoeib and Madian, 2002) showed significant improvement in the food conversion when compared with control chicks. Probiotics supplemented groups consumed more feed but could not show a significant increase in body weight gain. That might be the reason for comparable feed conversion in the present study. Lower survivability of broilers fed diets supplemented with probiotics is available in the results of Zulkifli *et al.* (2000). When broilers were given a dietary supplementation of probiotics *(Lactobacillus* cultures) and exposed to 36±1º C for 3 hours daily from day 21 to 42. But the result of present study was inconsistent with the findings of some earlier studies (Samanta and Biswas, 1995; Fabris *et al.* 1997, Singh *et al.,* 1999; Hamid and Aijozuddin, 2001). In those studies, higher survivability in probiotic fed groups was found as compared to control ones. Since the result on survivability was quite acceptable in this study with little differences among the dietary groups, the beneficial effect could not be detected over the control group. The birds, in the present study, felt discomfort due to higher temperature 32±1º C for 6 hours daily from 23 to 35 days of age. This could not, in any way; either depress or improve performance significantly in. the probiotic fed birds. The superior performance index in Synbiotics group might be due to slightly higher body weight since feed conversion was comparable in all groups. The broilers of Synbiotics group attained highest production number probably because of more body weight compared to other dietary treatments since its livability percentage was close to the other treatment groups. The findings on performance index and production number of broilers in the present study could not be related with other findings due to lack of published information on these variables.

The observation of the present study with regard to meat yield was consistent with the findings of Mandal *el al.* (1994); Panda *et al.* (2000); Ergun *et al.* (2000); Kalavathy *et al.* (2003) who found no significant difference in the weights of organs between control and probiotic fed broilers. But this result is inconsistent with the reports of Mahajan *et al.* (1999) and Bandy and Risam (2001). They claimed that there was a significant improvement in the dressing, eviscerated and edible meat yields due to addition of probiotics. Significant reduction in the abdominal fat compared to control one agreed with well the results of some previous workers (Chah *el al.,* 1975; Santoso *et al.,* 1995; Kalavathy *el al.,* 2003). They found that diet supplemented with probiotics reduced abdominal fat significantly in boilers. But this finding contradicted with the observation of Panda *et al.* (2000) who found no significant effect of probiotics on abdominal fat of broilers.

Probiotics could not show its beneficial effects on the profitability of broiler raising. The findings of the present study is similar to the observations of Lee *et al* (1993); Samanta and Biswas (1995); Laduar *et al.* (2001). They reported that probiotic supplementation per kg live weight gain could not reduce the cost of production of broiler as well as net income per bird did not reveal any statistical variation among the groups. But this finding is inconsistent with the results of Khan *et al.* (1992), Singh *et al.* (1999); Bandy and Risam (2001) who claimed that the addition of probiotics in the diet of broiler chicks had improved profitability in broiler production.

Although statistically significant effect of synbiotics & probiotics was found but slightly improvement in body weight gain observed in oxytetracycline group compared to control ones. Among the meat yield characteristics, reduced abdominal fat appeared as a positive but come in the present study. It may be concluded on abdominal fat with the synbiotics levels lower the abdominal fat then with the probiotics after then with the oxytetracycline group compared to control group. The economics of feeding synbiotics, probiotics & oxytetracycline clearly indicated that cost of production decrease by synbiotics as compared with probiotics & oxytetracycline...In addition, use of synbiotics, probiotics & oxytetracycline in drinking water, a different route of administration, may be examined in the future. An investigation into the existence, nature and viable cell counts of different species of gut micro-flora, would be interesting to understand the mechanism of action of synbiotics, probiotics & oxytetracycline bacteria.

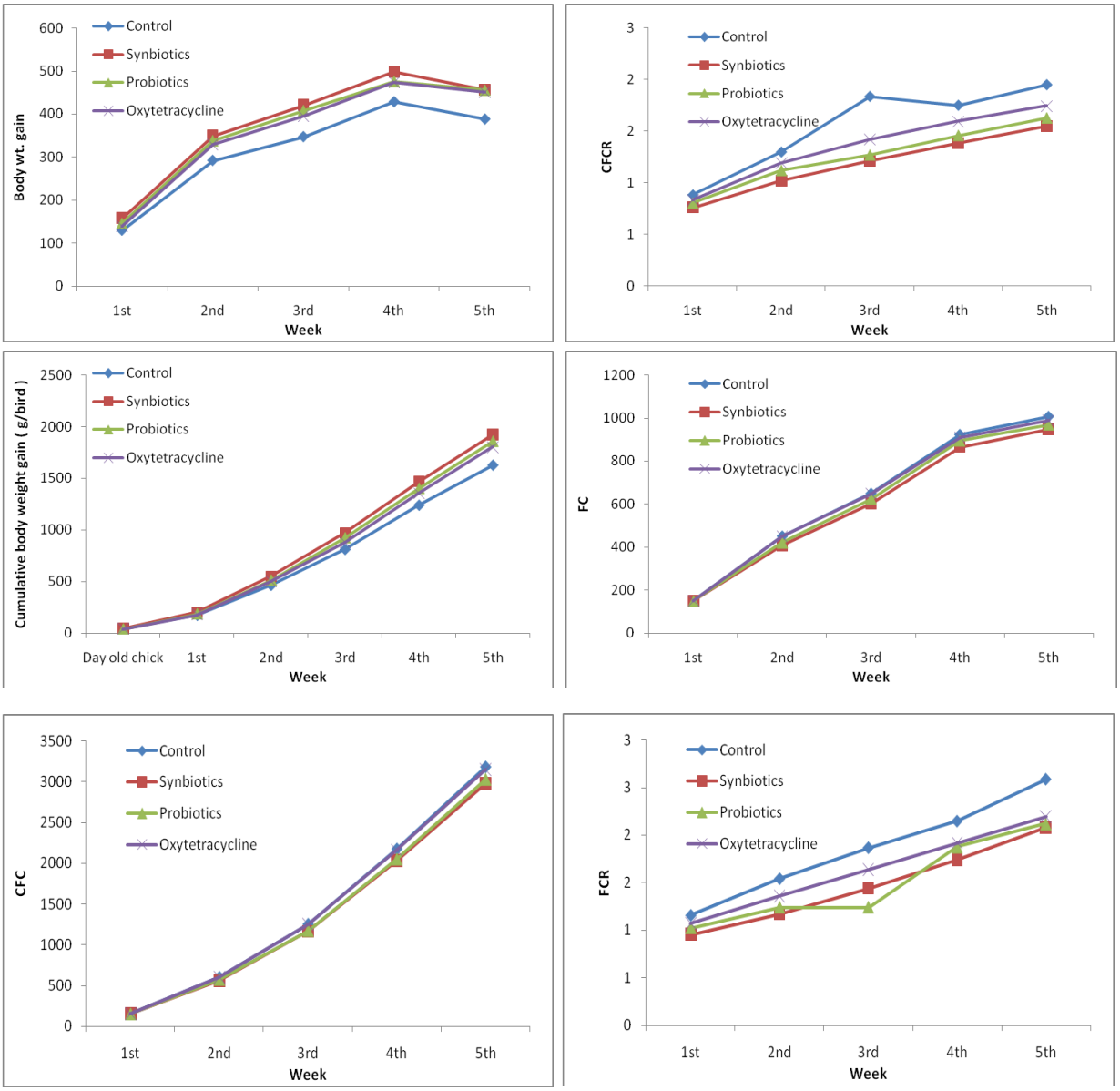

Figure 1. Weekly effect of supplementation of Synbiotics, probiotic & Oxytetracycline in the diet of broilers on body weight gain, feed intake and feed conversion ratio

Table 3. Mortality and survivability of treated birds

Treatments	Total No. of birds	Mortality (%)	Survivability (%)
Control	12 x3	8.333	91.667
Synbiotics	12 x3	8.333	91.667
Probiotics	12 x 3	8.333	91.667
Oxytetracycline	12 x 3	8.333	91.667

Table 4. The detailed cost of production after supplementation of the feeds on broiler diet

Cost of production (Tk)	Dietary Treatments				Level of significance
	Control	oxytetracyclin	Synbiotics	Probiotics	
Feed cost @ 45 tk/kg	5997.78	6032.34	6129	6087.42	NS
Chick cost@28 tk/bird	1344	1344	1344	1344	NS
Disinfectant cost (Tk)	10	10	10	10	NS
Medicine cost (Tk)	30.00	30	30	30	NS
Transport cost (Tk)	10.00	10	10	10	NS
Depreciation cost (Tk)	200.00	200	200	200	NS
Litter cost (Tk)	100.00	100	100	100	NS
T.G.I (probiotics) cost (Tk)	-	133.33	266.66	399.99	NS
Total cost (Tk)	7893.98	8061.87	8291.86	8383.63	NS
Cost/broiler (Tk)**	167.95^{C}	171.53^{C}	176.42^{B}	182.25^{A}	***
Total selling @Tk 110/Kg	8011.30	8996.35	9566.15	9413.8	NS
Profit/Broiler (Tk)**	2.50^{D}	19.88^{C}	27.11^{A}	22.39^{B}	***

A feeding trial with 192 straight-run day-old Cobb-500 broiler chicks, was carried out Sadia agro village, Bogra in summer season to observe the influence of synbiotics, probiotics & oxytetracycline on the performance of broilers. The duration of the experimental period was 35 days from 24 April to 29 May, 2014. The chicks were randomly distributed to 4 different dietary treatments each having 4 replication where each replication (pen) contained 12 birds. The 4 dietary treatments were control, control + 50 gram synbiotic per 100 kg feed, control + 10 gram probiotic per 100 kg feed and control + 10 gram oxytetracycline per 100 kg feed. Feed and water were provided *adlibitum* to all birds throughout the experimental period. Identical care and management were followed for birds of all dietary groups.

At the end of the feeding trial, the cumulative body weight gain of different groups was 1628.5, 1922, 1861.25 & 1804.25g in control, synbiotics, probiotics & oxytetracycline groups, respectively. Birds that received synbiotic at 50g/100kg feed gained more weight although body weight gain of broilers of different dietary groups differ significantly compared to control ones (P>0.05). The broilers of control, synbiotics, probiotics & oxytetracycline groups consumed 3177.5, 2974.75, 3024.74 & 3147.50 g feed respectively, during the whole experimental period. From 1 to 35 days of age, the feed conversion ratio was 1.95, 1.55, 1.63 & 1.75 in control, synbiotics, probiotics & oxytetracycline groups respectively. There were significant differences in feed consumption and feed conversion of broilers among different dietary treatment (P>0.05). The survivability of broilers ranged between 95.83 & 100 % from 1 to 35 days of age. Survivability of broilers was quite acceptable in all dietary groups during the whole experimental period. The performance index as well as production number of broilers was highest in birds that received synbiotic at 50 gram per 100 kg feed feed. Performance index and production number of broilers of different dietary groups vary significantly (P>0.05) compared to control ones. Investigation into meat yield characteristics revealed that synbiotics, probiotics & oxytetracycline has beneficial effects on the per cent weight of different organs of broilers and a reduction in abdominal fat. The cost per kg live broiler was lowest in control group compared to synbiotics, probiotics & oxytetracycline supplemented groups. The profit per kg live broiler was highest in synbiotics group. The profit of broiler raising differed significantly (p<0.001) among different dietary groups due to addition of synbiotics, probiotics & oxytetracycline.

Conclusion

Considering the results of this study, it may be concluded that little improvement in body weight gain is achievable in birds that received probiotics & oxytetracycline at 10 g and 10 g per 100 kg feed. More improvement in body weight gain is achievable in birds that received synbiotics at 50 g per 100 kg feed. The effects of supplementing synbiotics on meat yield are comparable except that it may be effective to reduce the abdominal fat of broilers. Supplementation of synbiotics, probiotics & oxytetracycline in broiler diets among 50g,10g and 10g/100 kg (feed increases feed cost suggesting that cost of synbiotics, probiotics & oxytetracycline need to be minimized or responses of birds would have to be maximized).

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