

Short Communication

Effect of Probiotic and Growth Promoters on Chemical Composition of Broiler Carcass

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ABSTRACT

Experiment was performed to study the effect of probiotics and growth promoters (Protexin, Albac & Dried Curd) on the chemical composition of broiler carcass. Birds were reared under similar environmental and managerial conditions up to 42 days of age except treatments. Chemical composition of all four treatment groups (Randomly divided in to 12 experimental units) was done in the Laboratory for Moisture percentage, Crude protein, Lipids, Ash and Nitrogen Free Extract. The birds using diets supplemented with Protexin, Albac and Dried Curd showed significant effect on the moisture levels in tissue or carcass. The experimental birds using diets supplemented with Protexin, Albac and Dried Curd also revealed a positive effect on the crude protein contents. The range of lipids was observed highest under Albac feeding while its level remained almost in the same range under Protexin and Dried Curd feeding compared to non-treated birds. Ash contents of the broilers, which were not fed any growth promoters or probiotics were noted surprisingly higher than treated birds. However, negligible difference regarding ash contents was observed between the Protexin and Dried Curd fed birds. The matter may be referred to further studies.

Key Words: Probiotics; Chemical composition; Growth promoters; Broiler; Carcass

INTRODUCTION

A number of Probiotics are available in the market with different trade and commercial names bearing very high publicity. Probiotic is a combination of beneficial bacteria adaptable to the intestinal mucosa of all warm-blooded animals. However, the primary bacterial organism is *Lactobacillus acidophilus*, which implants itself on the villi of the intestinal wall in astronomical numbers thereby creating an acid environment through the very nature of the organism, which grows best at pH of 5.0 to 6.5. The implantation through an effect called crowding begins to take over the environment of the gut producing eventually an excellent state intestinal health, creating an appetite and making available a medium for the complete digestion, absorption and assimilation of all nutrients being acted upon by the intestine.

This experiment was conducted to study the effect of probiotics and growth promoters on the chemical composition of broiler carcass.

MATERIALS AND METHODS

The study was conducted at poultry experimental farm of University College of Agriculture, Rawalakot Azad Kashmir in 2002. Two hundred and forty, day old, broiler chicks (Hubbard Classic) were purchased from the Rawalpindi commercial chick hatchery. The chicks were

collected from hatchery and then randomly divided into twelve experimental units comprising twenty chicks each. These units were randomly allotted to four experimental treatment groups (A, B, C & D) replicated thrice according to completely randomized design. These units were labeled as A₁, A₂, A₃, B₁, B₂, B₃, C₁, C₂, C₃ and D₁, D₂, D₃, respectively for identification. Chicks were wing banded and placed in individual compartments on deep saw dust. The birds were brooded and kept at room temperature. Group B, C and D were provided with Protexin, Albac and Dried Curd according to recommendations of manufacturer. (Protexin @ 1 g L⁻¹ drinking water, Albac @ 100 mg kg⁻¹ feed, Dried curd @ 100 mg kg⁻¹ feed).

Group A was not offered any probiotic and served as control. Treatments were continued up to 35 days and withdrawn one week prior to marketing. Chicks were fed commercial starter broiler ration for the first four weeks and then broiler finisher ration for the last two weeks ad libitum. Clean, fresh water and twenty-four hours light was provided.

Vaccination against Newcastle Disease was carried out during 5th and 24th day of age intraocularly and in drinking water, respectively using *La Sota* strain embryo live virus vaccine. Vaccination against infectious bursal disease was also performed during 10th and 20th day of age intraocularly. Furthermore, birds were also vaccinated against Hydro Pericardium Syndrome (H.P.S) at 17th day of age, subcutaneously.

At the end of the rearing period after removal of feathers, skin, aorta, offals and giblet, eviscerated carcass was taken and dried in a forced draft oven at 101°C until constant weight was obtained. They were then ground in a meat grinder and samples were taken for the analysis. The analysis of the carcass was done according to Richard (1984) methods. Following proximate analysis was determined for each sample according to AOAC (1984) methods: Moisture percentage, Crude protein, Lipids, Ash, and N.F.E.

RESULTS AND DISCUSSION

The average value of moisture percentage of broiler chicks under treatment A, B, C and D were 70.75, 70.00, 69.50 and 69.8, respectively. Apparently the highest value was recorded for chicks under treatment A and B, followed by treatment C and D, Analysis of variance showed significant difference among different treatment groups.

The average crude protein percentage of meat of broiler chicks under treatment A, B, C and D was 28.92, 28.96, 27.46 and 29.09, respectively. Apparently the highest value was recorded for treatment group D and lowest one for group C. Analysis of variance showed significant difference among different treatment groups except control and Albac fed chicks.

The average fat percentage of the meat of broiler chicks given treatments A, B, C and D was 1.88, 1.50, 3.66 and 1.72, respectively. Highest value was recorded for treatment C. While the performance of all other broilers groups was similar regarding lipid contents. Analysis of variance of the data showed significant effect of treatments on the fat percentage of the meat of experimental broilers in Protexin supplemented birds but all other groups indicated no difference in lipid contents.

The average values of the ash percentage of the meat of broiler chicks under treatment A, B, C and D were 2.11, 1.94, 1.66 and 1.72, respectively. The highest value was noted in treatment group A and lowest one in group C and D. Statistical analysis of the data showed significant effect of treatment on the ash percentage of meat of experimental chicks.

The effect of yeast protein Vitex in groups of 200 broiler birds with age ranging from 21 - 49 days was studied by Machalack *et al.* (1988). They replaced 0, 5 and 10% of soybean oil meal with similar amount of yeast protein concentrate Vitex (48% crude protein). The results showed no difference in carcass quality among the birds of both treatments. Likewise, a trial was conducted by Kociova *et al.* (1990) on the efficacy of the probiotic "Thepax" in fattening broiler chickens. Chickens were fed from 1 to 49 days old on basal diet with or without Nitorvin at 15 mg kg⁻¹ and Thepax (inactivated cells or yeast *Saccharomyces cerevisiae*) at 350 and 200 mg kg⁻¹, during pre-fattening and fattening periods, respectively. Thepax produced a carcass with lower fat content. The

effect of feeding pelleted diet supplemented with probiotic (*Lacto-sacc*) on digestibility and growth performance of rabbits was also studied by El-Gaafary *et al.* (1992). *Lacto-sacc* (yeast culture & lactic acid producing bacteria) added at the rate of 1 g kg⁻¹ to the growing rabbits increased digestibility of crude protein and crude fiber significantly.

The effect of dietary antibiotic and probiotic on the performance of broilers was reported by Lee *et al.* (1993). 540-broiler chicken, (one-day-old) were fed on diets supplemented with 0 or 0.05% erythromycin thiocyanate, zn bacitracin, *Clostridium butyricum* miyari 11, 588 or *Streptococcus faecium* c - 68 or 0.02% *Streptococcus faecium* m-74. Digestibility of dry matter, crude protein, ether extract and nitrogen free extract were not altered by antibiotics or probiotics.

Biomass protein was produced with *Arachniotus* species and *Candida utilis* on acid treated corn stover in the presence of poultry litter by Ahmed and Hashmi (1993). The maximum biomass protein obtained through growth medium containing 6% (v/v) corn stover, 0.0075% cac12, 0.005% Mg SO₄ 7H₂O, 0.01% KH₂K₄ ration and addition of molasses after 96th h of incubation. They observed that there was no significant difference among the experimental rations with respect to apparent protein digestibility, net protein utilization and biological value.

It is recommended that Dried Curd in various doses, forms and combinations should be tried in the future research plans to explore the real status of Dried Curd so that this natural growth promoter may be introduced to the farmers without any harmful effects to the consumers after chemical analysis of meat. The histological studies might be arranged with special reference to hormo-chemical and economic appraisals of the poultry. Similar experiment may also be arranged in layers.

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(Received 28 July 2005; Accepted 10 October 2005)