

RESEARCH PAPER

Effect of virginiamycin on microbiological parameters, litter quality and performance of broilers fed varying levels of protein

M.C. SHIVAKUMAR, B. UMAKANTHA AND G.N. MARADDI

Accepted : November, 2008

ABSTRACT

Biological trial of 42 days was conducted on broiler performance, gut microbiology and litter condition to evaluate the effect of virginiamycin supplementation with two levels of protein 21.87 and 20.78 % crude protein during starter and 22.00 and 21.04% crude protein during finisher using 2 x 2 factorial designs with 352, one day-old chicks. Virginiamycin at the rate of 20 ppm during starter and 10 ppm during finisher was added to each test diet. The data on body weight, feed efficiency, livability, intestinal bacterial load and litter quality was recorded. Normal protein and sub optimal protein with virginiamycin significantly ($P < 0.05$) better feed efficiency was recorded over their corresponding unsupplemented groups. Feed consumption and body weight remained non significant among the groups. Hundred per cent livability was noticed in virginiamycin groups where as 98.75 and 96.25 per cent livability in unsupplemented group of normal protein and sub optimal protein group, respectively. Litter moisture differed significantly ($P < 0.05$) in sub optimal protein with and without virginiamycin group. Litter score was significantly lower in virginiamycin supplemented groups. Total bacterial and cocci count differed significantly ($P < 0.05$) between supplemented and control groups from II and IV week onwards, respectively. Relative economics was calculated and net returns/bird over feed cost was better in all the supplemented groups.

See end of the article for authors' affiliations

Correspondence to :

M.C. SHIVAKUMAR

Department of Animal Science,
College of Agriculture,
Bheemarayanagudi,
GULBARGA
(KARNATAKA) INDIA

Key words: Broilers, Virginiamycin, Protein, Performance, Microbiological parameters, Crude protein.

The term antibiotic growth promoter is used to describe any medicine that destroys or inhibits microorganisms and is administered at a low, sub therapeutic dose. According to National Office of Animal Health (NAOH, 2001) Antibiotic growth promoters are used to help growing animals digest their food more efficiently, get maximum benefit allow them to develop into strong and healthy individuals (Peter Hughes and John Heritage, 2004). Antibiotics that are safe, non-toxic and have no residual effect on birds with no requirement of withdrawal period are routinely used in poultry rations (Moore, 1946). Many growth promoters are used routinely. Virginiamycin is one such widely used safe antibiotic growth promoter in poultry. Virginiamycin is an antibiotic produced by a mutant strain of *Streptomyces virginiae* (Desomer and Van Dijeck, 1955). Virginiamycin is a useful antibiotic feed additive for growth promotion and improved feed conversion in swine and poultry. Addition of antibiotics to poultry diets are postulated to suppress the total microbial load of the bird and thus help to improve the performance. Miles (1982) reported that broilers utilized protein more efficiently when virginiamycin was supplemented to diets containing even suboptimal levels of protein. Though the addition of virginiamycin in broiler diets is common practice in poultry feed industry, the

perusal of literature revealed little information about its use in diets with various levels of proteins to arrest the microbial load in gastro-intestinal tract of birds and litter quality further improving the overall performance of broilers in turn the farm economy.

MATERIALS AND METHODS

Three hundred fifty two, one day-old cobb strain commercial broiler chicks were obtained, weighed, wing banded and randomly distributed on deep litter. Four treatments, T₁-as control with normal protein and without virginiamycin, T₂-normal protein with virginiamycin, T₃-suboptimal protein without virginiamycin and T₄-suboptimal protein with virginiamycin. Each treatment consisted of 88 chicks with 22 chicks in each replication. Two experimental diets (Table 1) of broiler starter (21.87 and 20.78 % CP) and finisher (22.00 and 21.04% CP) with different levels of protein were formulated. Each test diet was fed with and without virginiamycin (2% w/w virginiamycin) supplementation at 20 ppm during starter (0-3 weeks) and 10 ppm during finisher (4-6 weeks) period.

One bird from each replicate was slaughtered at second, fourth and sixth weeks of age to study the effect of virginiamycin supplementation of different experimental