



EFFECT OF NATURAL CHOLINE ON FEED UPTAKE, BODY WEIGHT AND FCR IN BROILERS COMPARED TO SYNTHETIC CHOLINE CHLORIDE.

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ABSTRACT

The present study was conducted to evaluate the efficiency of supplementing natural choline instead of synthetic choline chloride in diets of broiler chickens. One hundred eighty Cobb-500-day-old broiler chickens were randomly distributed into five treatment groups with 20 chicks in each having three replications and reared up to 6 weeks of age. The treatment group T1 (control) was given basal diet (BIS, 2007) without synthetic choline chloride-60% (CC) or Natu choline® (NC), group T2 was given basal diet with choline chloride-60% @ 1 kg/ton of feed, groups T3 was given basal diet with Natu choline @ 250 g/ton of feed, respectively. The weekly growth performance parameters were studied up to 6th weeks of age in broiler chickens. The mean weekly body weight and weight gain of birds in T3 group (0.25 kg/ton Natu choline) was significantly ($p < 0.05$) higher than all T2 and control group T1 fed diet without supplementation of any choline chloride. The birds from treatment group T5 fed diet containing Natu choline at 0.250 kg/ton of feed showed significantly higher ($p < 0.05$) cumulative feed consumption than treatment group T2 fed diet at 1 kg/ton of synthetic choline. The higher survivability was observed in groups T2 and T3 compared to control. The highest mortality was observed in control group T1 fed diets without supplementation of synthetic choline chloride or Natu choline in feed. The highest FCR was observed in treatment group T5 receiving diet at 0.250 kg/ton of Natu choline followed by treatment groups T2 and T1. The overall performance of the birds under treatment group T3 was found to be better. It may be concluded that supplementation of Natu choline at 0.250 kg/ton of feed replaces synthetic choline chloride-60% routinely added at 1 kg/ton of broiler feed.

KEYWORDS : Natu Choline, Rivansh Animal Nutrition, choline chloride

INTRODUCTION

Due to fast growing poultry industry, feeding broiler chicken with energy rich diets has become a common practice by farmers. However, these high energy diets which are rich in inorganic nutrients aid in shortening of rearing period that could increase the risk of fatty liver syndrome in broiler chickens (Leeson *et al.*, 1995). To overcome this situation synthetic dietary nutrients must be replaced with natural herbal extracts which are more bio available and easily absorbed by birds. Supplementation of choline in poultry ration is well established to improve growth, performance, and carcass quality in broilers (Attia *et al.*, 2005).

One of the essential amino acids supplemented in poultry feed *viz.*, choline is necessary in the production of acetylcholine, which is used in the transmission of nerve impulse, fat metabolism and prevents fatty liver (Xu *et al.*, 2010). Choline is a critical amino acid for poultry and usually added to feed diets in the form of synthetic choline chloride. However, supplementing the feed with synthetic choline chloride has many drawbacks and is also very less absorbed from intestines.

To solve this problem, plant extracts rich in choline and other amino acids are being produced which have high bioavailability and could be an alternative to synthetic choline chloride. In previous research conducted on choline suggests that natural choline could easily replace choline chloride in diets for poultry (Gangane *et al.*, 2010).

The present study was undertaken to evaluate the performance of broiler chickens supplemented with Natu choline compared to synthetic choline chloride in feed diet up to forty-two days.

The parameters like Body Weight gain, Feed intake, Feed conversion ratio are observed for evaluating the effects

MATERIAL AND METHODS

The study was conducted on 180 male cobb 500 broiler day old chicks and were reared up to seven weeks on deep litter

housing system, which were divided into three groups of 60 birds each. The experiment design was completely randomized comprising three treatments with three replicates of 60 birds in each experimental unit. The description of the experimental treatments is given below. The birds were offered clean drinking water throughout the experiment. The experimental design and the details of the treatments and feed diet are presented in Table 1 and 2 hereunder:

Table 1. Treatments

Treatments	Choline sources	Rep.
1) Control (without choline)	-	3
2) 1 kg/MT choline	Choline chloride	3
3) 250 g/MT choline	Natu choline	3

The treatment group T1 (control) offered feed diet with no synthetic choline chloride-60% or herbal choline, group T2 offered basal diet with choline chloride-60% @ 1 kg/ton of feed, group T3 offered basal diet with supplementation of Natu choline @ 250 g/ton of feed respectively. The standard practices were followed for all treatment groups throughout the experimental period. The birds were weighed at three, five and six weeks to investigate the average weight, average weight gain, average feed intake and feed conversion.

Table 2 The Diet Followed During The Experiment.

Raw Material	Group 1(T1)	Group 2(T2)	Group 3(T3)
Maize	55	55	55
Soya Meal	15	15	15
Rapeseed Meal	3	3	3
DDGS	4	4	4
Rice Bran Oil	1	1	1
De oiled Rice Bran	11	11	11
LSP	10	9.9	9.9
Salt	0.6	0.6	0.6
Lysine	0.15	0.15	0.15
Methionine	0.1	0.1	0.1
Vitamin Premix	0.05	0.05	0.05
Mineral Premix	0.1	0.1	0.1
Choline	0	0.1	0.1

Choline chloride	0	1	0
Natu choline	0	0	0.250
TOTAL			

Statistical Evaluation

The data was analyzed using analysis of variance (ANOVA), at the level of 5% probability for comparison of means of experimental treatments. Herbal choline levels were analyzed by polynomial regression so that the best level was obtained by deriving the quadratic equation.

RESULTS

Performance

The performance data of broilers in the total rearing phase (1 to 42 days) are presented in Table 1.

Table 1. Performance Of Broilers Fed Diets With Different Sources And Levels Of Choline During The Entire Production Phase (1 To 42 Days).

Treatment	BW (kg)	FI (kg)	FCR
1) Control (without choline)	3,28	5,08	1,548
2) 1000g/kg (Choline chloride)	3,37	5,07	1,504
3) 250 g/kg (Natu Choline)	3,40	5,10	1,500

CONCLUSION

The use of Natu choline has affected the performance of broilers in the rearing phase of 1 to 42 days with more body weight, better FCR. In broiler chicken diet hence, it is proven that supplementation of Natu Choline 250 gm per MT can very effectively replace 1 kg of choline chloride. This significant performance is attributed to its better digestibility, more bioavailability & no TMA production. Natu Choline had significant difference in terms of better gut health as compared to choline chloride as it was found that due to its non-corrosive nature Natu Choline exhibit better effect on villi growth in intestine hence prove more effective in terms of performance than choline chloride.