

Research Article

Dietary effect of autolysed yeast on broilers (Levabon®, Biomin Austria) on broiler growth

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Abstract

A pilot scale project of 4 weeks feeding trial using 1500 broiler chicks was conducted in a commercial poultry shed, hired for this purpose to study the comparative growth performance of a flock raised on levabon supplemented feed to that raised on the same feed without levabon (control). A total 1500 broiler chicks were divided in to 3 groups, control and treated (1g/kg and 1.5g/kg). Each group was further divided in to 10 replicates, containing 50 birds per replicate. Feed intake was not influenced by supplementation of levabon during this experiment ($p > 0.005$), however slightly higher numerical values were observed in treated group. While overall weight gain and feed conversion ratio was significantly Higher ($p > 0.05$) in birds fed on Levabon supplemented feed (1.5g/kg) as compared to the control group (feed without levabon). Dressing percentage, giblet weight was not significantly influenced by dietary treatment of Levabon (autolysed yeast), mortality was significantly reduced by supplementation of levabon ($p > 0.05$) during this trail. The net income per bird was significantly higher in treatment group than control. This study suggests the inclusion of autolysed yeast in broiler diet for getting better performance of broiler chicken.

Keywords: Autolysis yeast; Dietary effect levabon; Economics; Performance

Introduction

Broilers because of their genetic make-up have rapid growth rate and better feed conversion ratio and their potential cannot be

perfectly expressed unless, they are provided with balanced rations and the optimum conditions in the GIT to promote digestion and absorption of nutrients [1]. Such balance

rations contain protein enriched ingredients resulting in high risk of pathogenic microbe's manifestation. Different feed companies add antibiotics in poultry feed to check the growth of pathogenic microbes and to increase growth performance of broilers. But it is strictly prohibited by European Union since 2006 [2]. In order to address this problem, many other feed additive such as prebiotics and pro-biotics are used alternative to antibiotics (World Health Organization, cited by [3]. One of the alternatives of antimicrobial as feed additive is yeast (*Saccharomyces cerevisiae*), which is enriched in high biological valued crude protein up to 40-45% and B-complex vitamins [4]. Keeping in the importance of yeast, in this study the effect of autolysed yeast (Levabon®, Biomin Austria) was evaluated on growth performance of broiler's chicks.

Materials and methods

A pilot scale 4 weeks feeding trial using 1500 broiler chicks was conducted in a commercial poultry shed, hired for this purpose to study the comparative growth performance of a flock raised on Levabon supplemented feed to that raised on the same feed without Levabon (control). A total 1500 broiler chicks were divided in to 3 groups, control and treated (1g/kg and 1.5g/kg). Each group was further divided in to 10 replicates, containing 50 birds per replicate. Levabon was supplemented at rate of 1g/kg and 1.5g/kg, treatment were assigned randomly. The months of June and July were purposely selected for the experiment in order to test the feed during the most inclement part of the year. Feed and water were provided ad-libitum, except for the hot mid day time, when feed was removed. Vaccination was done according to the recommended schedule. Feed intake, weight gain, feed conversion ratio, percent mortality, dressed weight and giblet weight of broiler chicks were used as criteria of response.

Data on chick weight, weight gain and feed consumption was recorded on weekly basis. At the end of experiment representative samples were taken from each group for determining dressing percentage and giblet weight.

Levabon supplemented ingredients are listed in (Table 1).

Results and discussion

FEED intake/ Weight gain and feed conversion ratio (FCR): Feed intake was not influenced by supplementation of Levabon during this experiment ($P>0.005$), however slightly higher numerical values were observed in treated group, but palatability of treated diets may not be a major concern, as poultry have only rudimentary taste buds and so taste and smell are not likely to be of major importance in describing results of diet treatments. In the present study overall weight gain and feed conversion ratio was significantly higher ($P>0.05$) in birds fed on Levabon supplemented feed (1.5g/kg) as compared to the control group (feed without Levabon). The higher weight gain in treated group may be due to beneficial effects of yeast (*Saccharomyces cerevisiae*), which is enriched in high valued crude protein up to 40-45% and B-complex vitamins [4]. It also contains mannano-oligosaccharides (MOS), which are helpful in promoting growth performance of broilers, because it exerts some optimistic effects on mucosa of the intestine. Some studies suggest that improved performance of bird may be related with maintenance of balanced normal micro-biota of gastro intestinal tract by competition and antagonism with pathogenic organism; improve metabolism by enhancing the activity of some enzyme in digestion, ileal mucosa development and limiting the action of bacterial enzyme and ammonia gas production; it also stimulate the immune response of body [5]. Moreover, it enhance villus cells action, amplify anaerobic and cellulolytic bacteria which improve lactate

utilization. It has positive effect on gut pH, thus improving the digestibility and growth performance. So these factors might have been responsible for the increase gain in body weight and good feed conversion ratio (FCR). Our results are in line with [6] reported that an improvement broilers

performance supplemented with yeast in ration. This also agrees with [7] who reported broiler chicks fed on yeast supplemented diets had shown significant ($P < 0.05$) incensement in live weight gains and feed conversion ratio. Details are given in (Table 2).

Table 1. Analysis of soybean

Moisture %	Max.8.0
Crude Protein %	Min.37.0
Crude Ash %	Max.8.0
Crude Fat %	Min.0.3
Crude Fiber %	Max.2.0
Mannan %	Min.14
Glucan %	Min.20
PH-Value	4.5- 7.0

Vitamins ^{1,2}

Thiamin (B1), mg/kg	44
Riboflavin (B2), mg/kg	6.5
Niacin, mg/kg	44
Pyridoxin (B6)	31

Minerals ^{1,2}

Calcium %	0.4
Total phosphorus %	1.0
Sodium %	3.2
Potassium %	13
Magnesium %	1.6

Amino acids ^{1,2}

Lysine %	2.70
Methionine %	0.90
Threonine %	1.80
Tryptophan %	0.35
Valine %	2.70

(www.Biomin.net) or www.nti.pk

The final data collected on bird's performance were subjected to "Statistics 8.1" for analysis of variance at $P \leq 0.05$ level of statistical significance

Table 2. Feed intake and Feed conversion ratio FCR

Feed Intake	Mean	SEM	Weight Gain	Mean	SEM	Feed Conversion Ratio	Mean	SEM
Control	2721 ^a .3	1.2855	Control	1413 ^a .0	1.5236	Control	1.9270 ^a	2.211E-03
1g/kg	2724 ^a .3		1g/kg	1414 ^a .9		1g/kg	1.9240 ^a	
1.5 g/kg	2723 ^a .1		1.5 g/kg	1452 ^b .5		1.5 g/kg	1.8730 ^b	

Dressing percentage/ mortality

Dressing percentage was not significantly influenced by dietary treatment of Levabon (auto-lysed yeast) during this trail. Only numerically higher values were observed for treatment group than control. Findings of this study are in line with [8] who reported no significant effect on dressing percentage in broilers fed on yeast fortified diet. Mortality was significantly reduced by supplementation of Levabon in feed ($p>0.05$). This may be due to balanced microbial population in the gastrointestinal tract which has positive effect on physical

condition and performance in the broiler chicks. Some studies suggested that it exert some anti-inflammatory effects, which activate natural killer cells and B lymphocytes. MOS has shown some tremendous effects in decreasing pathogenic microbes of the gastro intestinal tract, motivating a strong immune response in body and uplifting the vigor of the intestinal villus [9-11]. All the above factors might explain, why lowered mortality was observed in group fed on Levabon supplemented feed as compared to the control group (feed without Levabon). Details are presented in (Table 3).

Table 3. Dressing percentage and mortality

Dressing %	Mean	SEM	Mortality	Mean	SEM
Control	57.264 ^a	0.4156	Control	2.8000 ^a	0.4761
1g/kg	57.967 ^a		1g/kg	1.3000 ^b	
1.5 g/kg	58.028 ^a		1.5 g/kg	0.9000 ^b	

Organ weight

In current study no significant effect were observed of treatment on broiler's gilet weight i.e liver, spleen and heart. Researchers like [12-14] reported no significant effect of

yeast supplementation on internal organs. However, [10] reported significant increase in liver, spleen and gizzards. Details are presented in (Table 4).

Table 4. Organ weight including liver, spleen and heart

Liver	Mean	SEM	Spleen	Mean	SEM	Heart	Mean	SEM
Control	51.519 ^a	0.5019	Control	2.6050 ^a	0.0129	Control	1.425 ^a	0.2016
1g/kg	51.597 ^a		1g/kg	2.6060 ^a		1g/kg	1.449 ^a	
1.5 g/kg	51.944 ^a		1.5 g/kg	2.6050 ^a		1.5 g/kg	1.608 ^a	

Economics

Although initial cost of feed was high due to supplementation of levabon, but net profit was improved by levabon treatments. It was because of levabon treatment which significantly improved final body weight and feed conversion ratio (FCR) of broiler

chicken and more live birds were available during marketing time, because of high mortality in control group. In light of above scenario, the net profit was higher in treatment groups than control. Details are given in (Table 5).

Table 5. Feed intake and weight gain

Feed Intake	Mean	SEM	Weight Gain	Mean	SEM
Control	108.85 ^c	0.0628	Control	197.82 ^b	0.2133
1g/kg	110.37 ^b		1g/kg	198.09 ^b	
1.5 g/kg	110.97 ^a		1.5 g/kg	203.35 ^a	

Conclusion

From the findings of current study, it is concluded that Inclusion of autolysed yeast @ 1.5g/kg of feed (*Saccharomyces cerevisiae*) in broiler's ration resulted in an improvement in their performance in terms of weight gain and feed conversion ratio. Farmers should be encouraged to include autolysed yeast in the diet for broilers for getting maximum net profit.

Authors' contributions

Conceived and designed the experiments: M Ullah, GM Marri & Q Jogi, Performed the experiments: RR Kaleri, H Rizwana, M Rasheed & JP Goil, Analyzed the data: ZA Khoseo, D Kumar & A Sahab, Contributed materials/ analysis/ tools: S Dari & A Kabir, Wrote the paper: RR Kaleri.

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