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The Effect of β-glucanase Inclution in Sorghum Based diet on Performance of Broiler Chicks

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Introduction

A major problem is that used of sorghum as other grain has fiber with contribute to low metabolism this in cell walls of allure layers and endosperm of sorghum Beta_ glucan and other NSPs may bind to dietary nutrient as well as reduce nutrient mobility there by impairing digestion and absorption.

Abstract

An experiment was conducted to study the effect of supplementation of commercial enzyme 1,4 -β-glucanase (Burgzyme C) on broiler ckicks performance,weight gain,feed convertion ratio,internal organs weights, serum total protein,glucose and colestrol.

One hundred and thirty two birds one day old broiler ckicks (Ross) were used in present study ,in acomplete randomized design .Birds were distributed into three groups (44birds/groub) with four replicates (11birds/replicate).Three level of enzyme 1,4 -β-glucanase (Burgzyme C) were used 0.0, 0.125 and 0.25g/kg with sorghum and groundnut basal_diet(A,B and C) respectively.The paramaters mezured were feed intake , body weight ,feed convertion ratio, dressing percentage, relative weight of internal organs and some blood parameters cholesterol,glucose and total protein. Feed intake and weight gain recorded weekly for each group. Statisical analysis were based on the pen as replication unit, with four replication per treatment .Data was analysed using computer programe SPSS and means were separated by the Duncun method.

The result indicated that inclusion of the β-glucanase enzyme significantly ($P < 0.05$) decreased total feed intake and significantly ($P < 0.05$) improved weight gain and feed conversion ratio of broiler ckicks. β-glucanase Supplemented had no effect on dressing percentage. However, weight of abdominal fat and weight of the internal organs (liver, spleen, gizzard and intestine) were significantly ($P < 0.05$) decreased affected by treatment . Enzyme treatments had no effect on blood glucose and total protein but significantly ($P < 0.05$) decreased serum colestrol. From presnt study result using of 1,4 -β-glucanase_in sorghum basal diet improved performance of broiler ckicks, so its recommended to add 0.25g/kg_β-glucanase to starter broiler diet,

Keywords: β-glucanase,broiler,cholesterol.

Material and Methods

Bird: Atotalof 132 one day old Ross broilers chick of closely similar weight and randomly assigned into 3 goub(44bird)with 4reblicate(11birds/replicate), temperature 29-30 ℃.

Diet ; sorghum, seam and ground cake were used as abasal diet and described as following: are presented in table(1)

-Diet A (Control diet) was abasal diet.

-Diet B was abasal diet supplemented with 0.125g β-glucanase /kg basal diet.

-Diet C was abasal diet supplemented with 0.25g β-glucanase /kg basal diet.

Table(1): Composition of the Experimental diets

Ingredient	**Starter**	**Finisher**
Sorghum	**62.5**	**67**
Groundnut cake	16	12
Seasme cake	14	13
Wheat Bran	1.25	1.75
Concentrate	5	5
Oyster shell	1	1
Salt	0.25	0.25
Calculated Analysis		
Crude protein	23.70	20.48
Me	3127.82	1377.2
Crude fiber	4.40	4.14
Calcium	1.06	1.0
Phosphorus	0.7	0.40
Lysine	1.19	0.73
Methonine	0.77	0.73
Detrimental Analysis		
Dry mater	92.8	91.7
Crude protein	23	21.5
EE	4.7	4.5
Ash	5.7	6.5
Crude fiber	5.4	4.4

Enzyme levels (Diet A 0.0g, diet B 0.125, and diet C 0.25g enzyme diet).

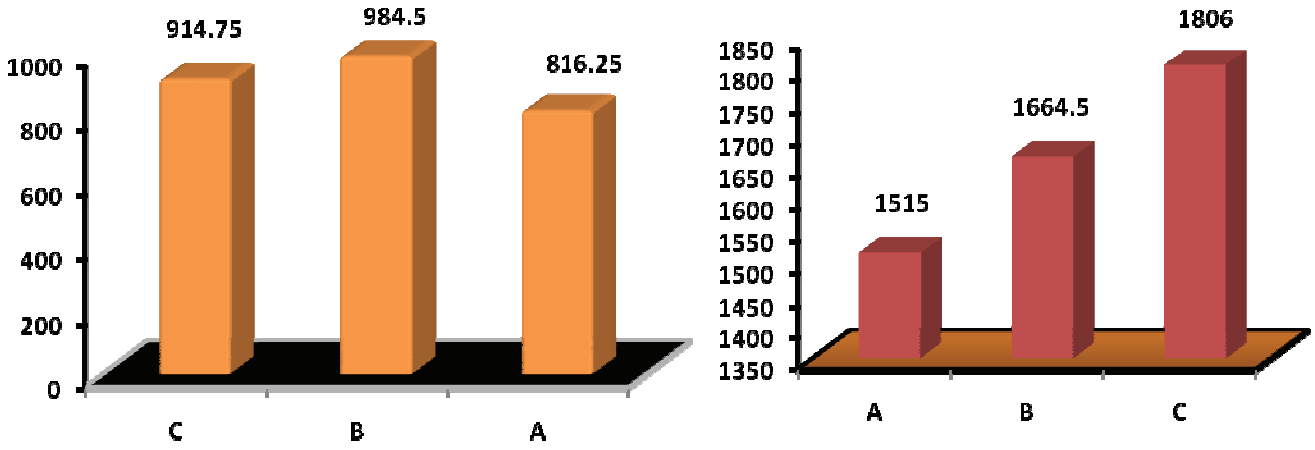
Results and Discussion

Dietary enzyme significantly increase body weight ($P < 0.05$) (Sun,et al 2002). The birds look healthy through experiments and enzyme treatment had no significant effect on mortality.

The dietary enzyme significantly reduced feed intake on starter (0 – 28 days) ($P < 0.05$), the bird fed on 0.25 g enzyme (1595.25g/bird) and 0.125g enzyme(1620.50g/bird) on followed by enzyme zero treatment (17130.0g/bird).

However, the reduction of feed intake associated with increasing level of enzyme was observed in the experiment.β-glucanase also significantly decreased the total feed intake (0 – 42 days) ($P < 0.05$), the bird supplemented with 0.125 g enzyme (3078.0 g) and birds with 0.25 g enzyme (3309.50 g)followed by zero enzyme(3941.00g/bird) Macleolda,et al 2003-Classen(1989)

Final weight gain was significantly higher in the birds supplemented with 0.25 g enzyme (1806.0 g) than the birds fed on 0.125 g enzyme diet supplemented diet (1669.5 g) followed by zero enzyme(1515.0 g) are presented in Fig (1).



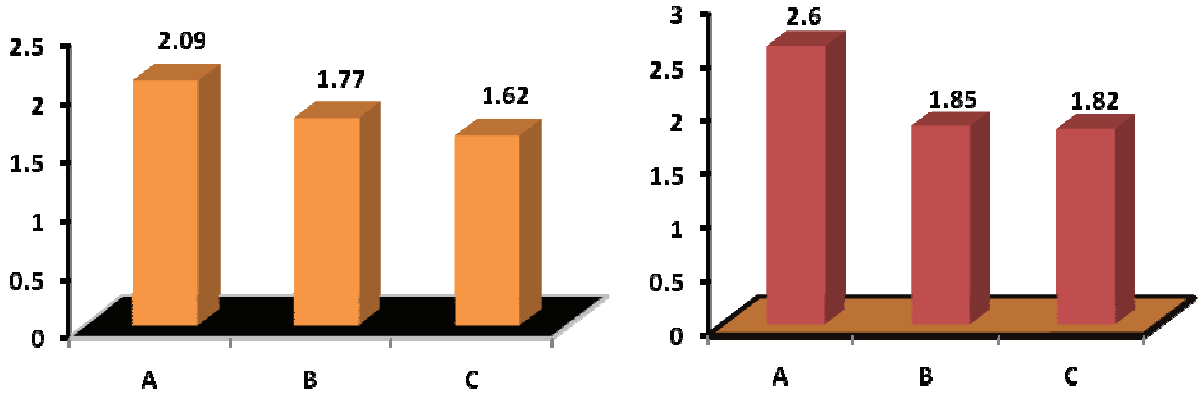
Wight gain gm/bird of broilers chicks 0-28 days old

Wight gain gm/bird of broilers chicks 42 days old

Fig (1): Effect of dietary 1,4 β - glucanase on weight gain

a-Sorghum (Feterita) based control diet.
b-Sorghum (Feterita) based diet plus 0.125 g/kg β-glucanase of feed.
c-Sorghum (Feterita) based diet plus 0.25 g/kg β-glucanase of feed.

Feed Conversion The best result at starter consumed period of those birds with dietery enzyme 1.62 and 1.77 followed by zero enzyme (2.9) (Korelesk et al 2000).
Consumatative the best result obtained from two dietary enzymes, 1.82 and 1.85 followed by control (2.60) are presented in Fig (2).



Feed Conversion Ration (28 days old) Feed/ Gain

Total Feed Conversion ratio (42 days old) Feed / gain

Fig.(2): Effect of dietary 1,4 β- glucanase on Feed conversion ratio

a-Sorghum (Feterita) based control diet.
b-Sorghum (Feterita) based diet plus 0.125 g/kg β-glucanase of feed.
c-Sorghum (Feterita) based diet plus 0.25 g/kg β-glucanase of feed.

The enzyme treatment had no significant effect (P > 0.05) on total serum glucose and protein of broiler chicks. However, the treatment significantly affected total serum cholesterol.
Dressing percentage were not significantly (P > 0.05) by enzyme. However, the dressing percentage was better in the two enzyme treatments. Diet C (0.25 g enzyme) resulted in dressing percentage 74.64%. And diet B (0.125 g enzyme level) gave slight result (72.97%) than diet A (0.0 g enzyme).
Dietary enzyme affected abdominal fat significantly, decrease in diet C (0.25 g enzyme) and less than diet B (0.125 g enzyme),and this was attributed to the increase in fat digestibility.
β-glucanase decrease sinificatly relative weight of internal organs intestine gizzard ,spleen and liver. Similar result obtained by Sum ,et al (2002) .
In the present study result obtained that using of commercial enzyme Burgzyme C (1,4 β-glucanase) significantly improved performance of broiler chicks.

Conclusions and Outlook
The results suggest that to add 0.25 g enzyme 1,4 β-glucanase /kg to starter broiler diet.
Further studies are necessary to confirm the results.

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