



EFFECT OF REPLACEMENT BAKER YEAST (*SACCHAROMYCES CEREVISIAE*) TO BROILER CONCENTRATE ON THE PERFORMANCE AND CARCASS YIELD

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ABSTRACT

One hundred and fifty (150) one –day old unsexed Ross 308 strain broiler chicks were used in this experiment to evaluate the effects of baker yeast (*Saccharomyces cerevisiae*) gradually replacing imported concentrate on the performance and carcass traits. Chicks were allocated into five treatment groups (A, B, C, D and E) in a complete randomized design, each group was replicated five (5) times each one with 6 chicks. Five iso-caloric, iso-nitrogenous diets were formulated, baker yeast replaced super concentrate in the ratios 0, 25, 50, 75 and 100%. Feed and water were served *ad libitum*. Chicks were vaccinated against gamboro. Body weight and feed consumption were measured weekly; average weight gain and FCR were calculated. Results obtained for weight gain and feed intake values were increased significantly by increasing the level of yeast replacement up to 50% then these values were decreased significantly by increasing of replacement above 50% . The mean values of feed efficiency were remained close similar between all groups. The levels of replacement had no significant effects on hot, cold dressing percentages, non-carcass yield, commercial cuts and subjective meat quality attributes and chemical composition of meat. 50% yeast replacement to concentrate obtained the highest value of marginal profit.

Key Words:- *Saccharomyces cerevisiae*, Yeast replacement to concentrate.

INTRODUCTION

The poultry production in Sudan faced, feed crisis because of high cost of production which attributed to raise of feed ingredients cost mainly imported concentrates (Mukhtar *et al.*, 2010). Therefore there are many attempts to replace the imported concentrates with locally available sources of proteins. Omer (2001) and Mukhtar (2010) were completely replaced imported concentrate by synthetic lysine and methionine, which were significantly improved chicks performance. Mukhtar and Tabidi (2014) completely replaced imported

concentrate with locally formulated one which reported positive effect on chick's performance. *Saccharomyces cerevisiae* which a famous as a backering yeast has very biological value and B-complex vitamin in itself (Phaff *et al.*, 1978). Dietary yeast *Sc.* supplemental at 2.5g/Kg improved growth performance (Gao *et al.*, 2008). Yeast products are important natural growth promoters, they improve chicks performance, decrease mortality, protect chicks against pathogenic factors by creating colony in digestion system. Seyyedmoussa (2011) found that feeding yeast *Saccharomyces cerevisiae* have significantly effect on performance and carcass traits of broiler chicks at a level of 0.2% yeast. Therefore, the objective of this study was to evaluate the effects of replacing imported concentrate with

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baker yeast (SC) in broiler diets on the performance carcass traits.

MATERIALS AND METHODS

One hundred and fifty, one-day – old chicks were used in this experiment. After a week of a adaptation period, they were assigned to five (5) treatment groups in a completely randomized design (CRO). Each treatment was further subdivided into five (5) replicates with six (6) chicks per each. Chicks were vaccinated against Gamboro disease at 11 day old water and feed were provided free. Five experimental diets (A, B, C, D and E) were formulated in which baker yeast (SC) replaced super concentrate 0, 25, 50, 75 and 100% respectively.

Performance parameters (body weight, feed consumption, body weight gain and FCR) were determined weekly. At the end of the experiment (6 weeks age), four chicks from each treatment were weighed individually slaughtered scaled, washed eviscerated. Liver, heart and gizzard were separated, individually weighed and calculated as a percentage of body weight. Carcasses were chilled at 4°C for 24 hours. Each carcass was divided into two halves; the left side was separated into the commercial cuts (thigh, breast and drumstick) which were weighed individually, deboned and the meat stored for further analysis. Collected data were analyzed using one-way ANOVA and means were separated by Duncan's Multiple Range Test (Duncan, 1955).

Table 1. Inclusion rates, calculated and chemical composition of dietary ingredients used of the experimental diets used

	A control	B	C	D	E
Dura	65.66	65.68	65.48	65.42	65.58
Ground cake	27	26	27	27	27
Sesame cake	1	2	1	1	1
Concentrate	5	3.75	2.5	1.25	0.0
Oyster Shell	1	1	1	1	1
Salt	0.25	0.25	0.25	0.25	0.25
Lysine	0.01	0.12	0.17	0.24	0.3
Meth.	0.05	0.06	0.1	0.09	0.2
Yeast	-	1.25	2.5	3.75	5
Calculated					
ME	3124	3129.6	3133	3138	3140
CP	22.89	22.9	22.9	22.99	22.99
Ca	1.34	1.16	0.97	0.79	0.6
P	0.65	0.6	0.54	0.5	0.43
Meth.	0.42	0.39	0.34	0.31	0.27
Lysine	1.14	1.08	1.0	0.98	0.92
Chemical composition:					
DM	100	100	93.4	95.25	93.34
CP	22.95	22.87	22.9	23	23.5
EE	3.05	3.03	3.63	3.55	3.65
CF	4.0	4.65	4.1	4.05	4.65
Ash	5.9	5.12	6.01	6.72	4.3
ME	3119	3124	3129	3133	3138
Calculate according to (Lodig <i>et al.</i> , 1976).					

Table 2. the effect of dietary SC replacement for super concentrate on the experiment chick's performance

Parameters	Treatments				
	A	B	C	D	E
Initial weight	50.0	50.0	50.0	50.0	50.0
Final weight	1729.0	1882.0	2128.0	906.0	741.0
Weight gain(g)	1679±121.7	1832.0±76.18	2078.0± 278	856.0±27	691±116
Feed intake(g)	3499±240	3822±192.6	4160±399	1816±142	1570±228
FCR	2.06	2.02	2.0	2.01	2.01
Mortality rate%	0.0	0.0	1	1	1

Means on the same raw having different superscript letters are significantly different ($p < 0.05$).

Table 3. Effect of different levels of (SC) on dressing percentage, body components and Commercial cuts expressed as percentage

Items	Treatments				
	A	B	C	D	E
Hot dressing %	69.37	69.47	69.5	69.42	69.45
Liver %	2.36	2.16	2.46	2.4	2.38
Gizzard %	2.62	2.58	2.69	2.59	2.58
Heart %	0.96	0.66	0.54	0.65	0.63
Breast %	23.52	23.44	23.87	23.43	23.41
Drumstick %	19.28	19.35	19.51	19.11	19.10
Thigh%	16.2	16.28	16.38	16.20	16.16

Table 4. Effect of different levels of (SC) Replacement on meat subjective and objective composition of broiler chicks

Items	A	B	C	D	E
Moisture %	69.2	69.3	69.3	69.1	69.08
CP	19.4	19.6	20.04	19.45	19.51
EE	12.15	12.9	12.11	12.2	12.29
Ash	1.23	1.25	1.21	1.22	1.22
Juiciness	5.7	5.9	5.9	5.8	5.5
Tenderness	6.7	6.73	6.88	6.73	6.77
Flavor	6.43	6.46	6.47	6.4	6.41
Total Cost	2.99	3.13	3.14	2.29	2.2
Total Revenue	3.07	3.39	4.0	2.53	2.3
Profit (Dollar)	0.08	0.26	0.86	0.24	0.02
Profit ability Ratio	1	3	10	3	3

Means on the same raw having different superscript letters are significantly different ($p < 0.05$).

RESULTS AND DISCUSSION

Table (2) showed the effect of dietary SC replacement for super concentrate on the experiment chick's performance. The mean values of body weight gain and feed intake were significantly ($P < 0.05$) increased with the increasing dietary SC level replacement till 50% then these values were decreased significantly ($P > 0.05$) with the increasing SC level replacement. The mean values of feed efficiency were remained close similar between all groups.

These results might be due to that baking yeast has very biological values and B-complex vitamin in itself. These results were accordance with findings of Phaff *et al.*, (1978), Onifade *et al.*, (1999), Celk *et al.*, (2001) and Seyyed (2011). Yeast protect chick against pathogenic factors by creating colony in digest system and improving performance the negative effect of replacement above 50% might be due to the deficiency of essential amino acids (Mukhtar, 2010 and Fritts *et al.*, 2001).

Results had no significant ($P > 0.05$) effects, on hot and cold dressing percentage, non-carcass yields and commercial cuts (Table 3). These results were in line with findings of (Mohamed, 1997; Elshoori 2004 and Mukhtar, 2010). The results of this experiment revealed that feeding on different levels of (SC) had no significant effect on broiler meat chemical composition (moisture, ether extract, crude protein and ash) values (Table 4).

CONCLUSION

These results were confirmed by the subjective quality values in broilers meat (tenderness, color, juiciness and flavor) they all being at moderate values. In conclusion, the results revealed that dietary (SC) has useful effect on broiler chick's performance and the level of 50% substitution of (SC) is more profitable, although, all levels of substitution are economically profitable compared to control group.

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