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COMPARATIVE STUDY OF LOCAL CONCENTRATE WITH IMPORT CONCENTRATE INCLUSION IN BROILER CHICKS DIETS

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ABSTRACT

A total of 120 broiler chicks, were used in this experiment to evaluate the effect of feeding local concentrate replaced the imported concentrate on the performance of broiler chicks. Three dietary treatments were formulated as: diet (A) containing 5% imported concentrate (IC), diets B and C containing 5% and 7.5% local concentrate (LC) respectively. The experiment was replicated four times with 10 chicks / replicate. The experiment was lasted for six weeks. The measured parameters were, average body weight, average feed intake average body weight gain and feed conversion ratio. Results obtained revealed that substitution of imported concentrate with local concentrate had significantly ($P<0.05$) positive effect on chicks performance. Whereas, chicks fed diet with 7.5% LC significantly observed best performance. However, chicks fed on 5% LC showed significantly ($P<0.05$) the best FCR. Substitution of local concentrate (LC) with LC economically profitable.

Keywords: Concentrate, Substitution, Chick's performance.

INTRODUCTION

In Sudan, concentrates have been used till now in poultry production due to its vital role to complete the protein and microelements in poultry feeds so, to maximize the growth performance of birds. Today the poultry industry, in Sudan faced, feed crisis because of high cost of production which attributed to raise of cost of feed ingredients mainly imported concentrates [1]. Now there were many attempts from nutritionists to replace the imported concentrate with different locally available protein sources [2] completely replaced imported concentrate by synthetic lysine and methionine and they recorded significantly improvement on the chick's performance.

Fishmeal is a natural balanced feed ingredient that is high in protein, energy, minerals (Calcium and Phosphorus), natural source of vitamins (including choline, biotine and vitamin B_{12}, A and E) and the microelements, selenium and iodine. The protein in fishmeal has a highly biological value in diets for animals [3]. It is rich in the essential amino acids particularly lysine and the sulfur amino acids [4]. Fishmeal naturally contains from 62% to 64% proteins and digestible fats. Its quality varies due to the variety, parts of fish and processing technologies [5,6]. The objective of this study is to evaluate the completely substitution of imported concentrate with locally produced one on the performance of broiler chicks and cost of production. 7.5% local concentrate respectively. One hundred and twenty, day-old, unsexed broiler chicks (Ross 308) were brooded at the teaching and Research Farm of College of Agricultural Studies. Sudan University of Science and Technology for the first week and fed control diet. The chicks were assigned to the three experimental diets in a complete randomized design, 40 chicks per treatment group, each treatment groups was further subdivided into four replicates of 10 chicks. Feed and water were supplied *addibilum*, and continuous light was provided throughout experimental period. Chicks were vaccinated against Newcastle and Gumboro diseases. Vitamins were offered before and after vaccinations.

Measurements taken were, feed intake, live body weight gain, feed conversion ratio (FCR) and mortality rate. At the end of 6 weeks experiment, 4 chicks from each treatment were randomly selected after overnight fast (except for water), weighted individually, slaughtered,

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carcasses were scaled in hot water and handlydefeathered, then eviscerated. The eviscerated carcasses were stored in refrigerator under -4ºC for 24 hours, then they were divided into two halves, each half was dissected into commercial cuts (Thigh ,breast ,drumstick) carefully from their points of origin and weighted individually and each one expressed as the percent of hot carcass. Data collected were subjected to analysis of variance; means were separated using Duncan's Multiple Range Test [7].

RESULTS

The effect of feeding by different levels of local concentrate (LC) on broiler performance was summarized in Table (2) and (Fig.1). Chicks with diets containing 5% or 7.5% local concentrate had significantly (P<0.05) higher body weight and average body weight gain compared with chicks fed diet containing 5% local concentrate consumed significantly (P<0.05) low feed compared with those fed on 5% imported concentrate and 7.5% local concentrate at the same time recorded significantly (P<0.05) the best feed conversion ratio. However, broiler final body weight average body weight, feed intake and feed conversion ratio were increasing improved by increasing the level of local concentrate (7.5%) inclusion to the diet. The health of the experimental chicks did not affect with the type of the concentrate, however, chicks fed on 7.5% local concentrate recorded zero mortality. Chicks fed with diet containing local concentrate (5% and 7.5%) were recorded more revenue and profit compared to chicks fed with imported concentrate although, chicks fed with 5% local concentrate observed the highest revenue and profit.

Fig. 1. Effect of feeding broiler chicks with different local concentrate compared with imported concentrate

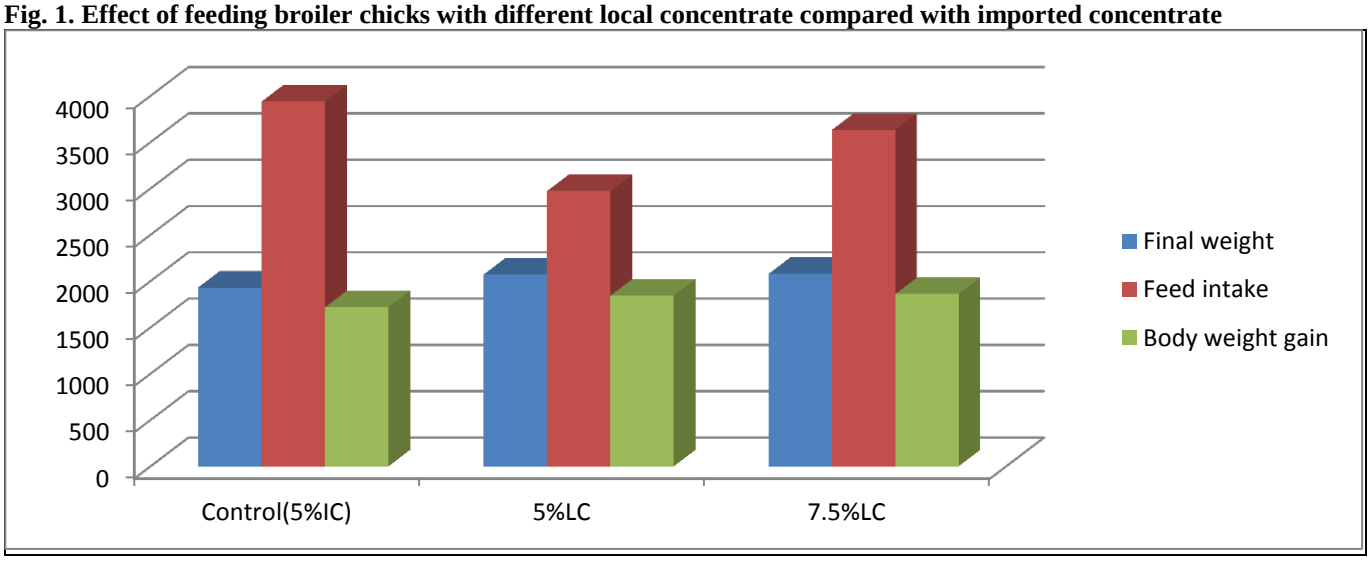

Table 1. Percent of ingredients inclusion of experimental diets

Ingredients	Control(5%IC)	5%LC	7.5%LC
Sorghum	65.75	64.142	62.1
Groundnut cake	13.0	14.0	13.0
Sesame cake	15.0	15.0	15.0
Imported concentrate	5.0	-	-
Local concentrate	-	5.0	7.5
Oyster	1.0	0.487	1.95
Salt	0.25	0.25	0.25
Lysine	-	0.344	-
Methionine	-	0.159	0.0

Table 2. Effect of feeding broiler chicks with different local concentrate compared with imported concentrate

Parameters	Control(5%IC)	5%LC	7.5%LC
Initial weight	213.5	228.7	218.5
Final weight	1930.8	2071	2078.5
Feed intake	3938.1	2971.84	3632.9
Body weight gain	1717.3	1842.3	1860
FCR	2.0	1.61	1.95

Table 3. Economical efficiency of feeding broiler chicks with different local concentrate compared with imported concentrate

Items	Control(5%IC)	5%LC	7.5%LC
Cost	13.36	14.29	14.15
Income	15.64	17.94	17.25
Profit	2.28	3.62	3.1
Profitable	1.0	1.59	1.36

DISCUSSION AND CONCLUSION

The local concentrate contained high level of fishmeal (20%) with synthetic amino acids mainly synthetic lysine (12%) and methionine (4.3%) and plant protein sources (groundnut cake and sesame cake). Chicks fed on different local concentrate performed significantly better compared to chicks fed on diet containing local concentrate. They recorded 7.26% of 7.65% more body weight, and 7.28%, 8.3% for body weight gain. Chicks fed on 5% and 75% LC respectively. This might be due to the high level of protein from many sources and with high biological value and to adequate higher available amino acids. These results were in line with the result of Ahmad [8] who recorded thatfishmeal improved broiler performance and the improvement affected with the level of fishmeal in the diet. Also these results were in agreement with the findings of Fritts et al [9], Omer [2] and Mukhter [1] who found that the broiler chicks performance improved due to adequate of higher available of amino acids. On contrary Agbede and Aleter [10] who replaced fishmeal with leaf protein contrite from glyricidin which caused significant reduction in the broiler chicks performance. Mortality of experimental chicks was within normal range although chicks fed diets with 7.5% local concentrate recorded no mortality, this might be due to that fishmeal protect health and welfare, results were agreed with that of [11].

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