Performance of Three Breeds of Sudanese Cattle

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ABSTRACT: The aims of this research was to study the body gain and feed conversion ratio in three local breeds of Sudanese beef cattle namely: (n= 46 Baggara, n= 10 Kenana and n= 74 Ambroro) and comparison between the breeds in the meat production, in Omdurman Islamic University farm - Faculty of Agriculture- in collaboration with family Bank). the calves has different initial weights ranging from 146 to 267 kg, and all animals fed by once concentrations at eight in the morning and five o'clock afternoon and provided by roughages (straws and hay). Data was analyzed by using randomized block design to comparison between the three breeds and variance analysis to distinguish between breeds. Results shown that there were no significant differences between the breeds in feed conversion ratio, but Kenana breed demonstrated highest rate of feed conversion than Baggara and Ambroro. Also Ambroro breed recorded a highest body gain in third measure at significant difference ($P < 0.05$). Kenana calves had highest ability body gain and lowest FCR than Baggara and Ambroro cattle.

Keywords: Sudanese breeds, body gain, feed conversion ratio

INTRODUCTION

Nutrition has a relationship of various parts of the body growth, and large impact to determining the final weights of the animals, as well as the proportions of each body parts (Mohammed, 1989). Also He mentioned that in the nutritional requirements of developing beef cattle better to calculate it maintenance and growth requirement of the protein in one number (total requirements). (Baumgart, 1969) that the feed intake governed by physiological and environmental factors. (Cooper and willis, 1979) has found that dry matter intake as an absolute value it is increases according to animal size, and expressing this value as a percentage of the animal weight, It can be said that the feed intake decreasing when the animal growth gradually. (Neumann, 1977) Noticed that the feed intake effect by age, animal size, parts and feed grinding (Wilkins *et al,* 1972), type of feed (Mohammed, 2004), animal Factors "strength of chewing muscle and teeth " (Bines, 1976), energy (Ahmed, 2005: El-toma, 2000), hormones (Rahama, 2005), Environmental factors (Mohammed, 1990).

Efficiency in meat animal production is measured by the body gain per unit of feed consumed, Feed conversion efficiency measured indirectly, which is a function of feed intake and body gain in a specified time. Changes that occur to the feed conversion efficiency can be traced back to the measurement efficiency in different environmental conditions (Robert *et al.*, 1963). Feed conversion efficiency of Baggara cattle is 6.5 - 7.74 kilograms of dry matter per kilogram increase in live weight (El shafie and Mcleroy, 1964). And 8.75 - 9.75 (Gaili and osman, 1979), 8.37-8.75 (Ahmed *et al.,* 1990). feed conversion efficiency of Baggara cattle fed at (Sorghum stover) at different levels of concentrates 100, 75, 65 and 55% mixed concentrates are as follows 8.6, 10.8, 9.5 and 9.5 kg dry matter per kilogram live weight of the four groups, respectively (El Teyeb *et al.*, 1990). When animal weight is increasing, feed conversion efficiency is the decreasing (Thissen *et al.,* 1984), they also found that feed conversion efficiency it is between 5.52 to 13.41 of Sudanese beef cattle.

MATERIALS AND METHODS

Data and Experimental Animals

An animal's brought from different parts of Sudan, west Sudan (Kordufan and Darfur) states and Central Sudan (White Nile) state from natural pastures areas. Animal kept at the semi intensive feeding system, the space allocated for one calf 4.5 meters square. Calves adapted progressively on concentration feed, gave 0.5 kg/head at first day concentrated diet with increase the quantity 54 kg daily until 12th days. After that all calves consume 7000 kg concentration feed weekly, and calves provided by roughages (hay, cereal straw) to the calves at morning and evening.

Table 1. Analysis of Concentration Diet Content for Three Breeds.

Feedstuff	Percent
Molasesses	46%
Wheat barn	20%
Groundnut cake	10%
Cereal grains(Feteritah)	10%
NaCl	1%
Limestone	1%
Urea	2%

Table 2. Nutritional components of diet

Item	Nutrient composition %
Protein	17.82%
MJ / kg energy	9.78%
calcium	0.76%
phosphorus	0.30%

Body gain parameters measured every two weeks by scale (Avery -Made in England-000 kg by 1kg Divisons -Type 3205 COE -Number 563 F7728-6) subtracting the first weight from Next weight.
Feed conversion ratio: Feed conversion ratio was calculated by the following equation:

$$\text{Feed conversion ratio} = \frac{\text{consumed feed weight in one week}}{\text{body gain weight in one week}}$$

Statistical analysis used randomized block design to analyze an experiment data, to comparison between the three breeds and variance analysis to distinguish between breeds. And every significant difference between means used computerized software SPSS program version 15.

RESULTS AND DISCUSSIONS

Table 3. Effect of breed on average body gain every two weeks.

Measure / Breeds	First Body gain	Second Body gain	Third Body gain	Total Body gain
Kenana	7.00 ±3.29	11.7 ± 3.70	15.90 ± 3.14	35.6±5.20
Ambroro	7.27 ±1.81	11.64 ± 2.04	17.67 ±1.73	35.06±2.86
Baggara	8.91 ±1.52	12.49 ±1.71	11.23 ±1.45	31.30±2.40
General mean	7.73	11.94	14.93	33.98
Significant levels p> 0.05	No sign.	No sign.	*	No sign.

Notice; Table3. Numbers described a mean ± standard deviations

No sign. = No significant
* = significance at 0.05 level

Table 4. The effect of breed on the average feed conversion ratio every two weeks

Measure / Breeds	First Body gain	Second Body gain	Third Body gain	Total Body gain
Kenana	18.69 ±7.55	9.11±8.86	8.88±7.05	12.22 ± 7.82
Ambroro	19.47± 4.15	22.29±4.88	6.41±3.88	16.05 ± 4.30
Baggara	23.56±3.48	18.00±4.09	17.93±3.25	19.83 ± 3.60
General mean	20.66	16.47	11.07	16.03 ± 5.24
Significant levels p> 0.05	No sign.	No sign.	No sign.	

Notice; Table 4. Numbers described a mean ± standard deviations
No sign. = No significant

Body gain

Table 3 shows the effect of breed on body weight results shown that the first and second measurements from starting of the fattening period there were no significant differences between breeds, but in third observation Baggara breed Has shown that biggest body gain than Kenana and Ambroro respectively at a significant difference level (P <0.05) of the third measure, where the body gain of Ambroro breed is a highest (17.67 ±1.73) kg (3th measure), Kenana (15.90 ± 3.14) and Baggara (11.23 ± 1.45) respectively, This results agreed with (Abu El azaim, 1996) that the Kenana breed had high ability body gain which is similar to Baggara breed and surpass them Baggara in feed conversion efficiency. As for the total body gain no significant differences between three breeds, whenever the general means of body gain is 33.98 kg at 45 days with average daily gain 750g per day.

Feed conversion efficiency (FCE)

Table 4. The effect of breed on the feed conversion ratio during the experimental period, The results shown that the first measurement from the beginning of the fattening period there were not significant differences between breeds. Kenana breed demonstrated higher feed conversion ratio than Ambroro breed (18.96 ± 7.55). In the second measurement also there was no significant difference (P > 0.05) in feed conversion ratio between breeds, but Kenana calves were the highest FCR than Baggara and Ambroro breeds: (9.11 ± 8.86), (18 ± 4.09) and (22.29 ± 4.88) respectively. In third measuring also there was no significant difference (P> 0.05) Ambroro breed was highest FCE than Kanana and Baggara breeds: 6.41±3.88, 8.88±7.05 and 17.93±3.25 respectively. The general average of feed conversion ratio of three breeds 16.07 during fattening period, and the daily an average conversion ratio is 1.45, this result was not agreed with (Thissen *et al*, 1984) feed conversion efficiency it is between 5.52 to 13.41 of Sudanese beef cattle also FCR of Kenana was decreased at last experimental period than Baggara and Ambroro because it is best adaptable to environmental conditions than others breeds.

CONCLUSION

This study carried out to investigate body gain and feed conversion efficiency of three breeds of Sudanese cattle which demonstrated that Kenana calves had highest ability body gain and lowest FCR than Baggara and Ambroro cattle.

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