Effect of Dried Sugar Cane Tops on Carcass Characteristics and Meat Quality Attributes of Sudanese Desert Goat Kids (B)

أثر رؤوس قصب السكر المجففة على صفات و جودة لحوم ذبيحة جديان الماعز الصحراوى

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Effect of Dried Sugar Cane Tops on Feedlot Performance, External Body Measurements and Non Carcass Components of Sudanese Desert Goat Kids (A)

Abstract:

This study was conducted to assess the carcass characteristics and meat quality attributes of Sudanese desert male kids fed diets containing different sugar cane tops levels. Twenty seven young desert goat kids less than one year old were purchased from Jabal Awlia local animal market. Then transported to the small ruminant pens at the Faculty of Agricultural Technology and Fish Sciences Elneelain University in Jabal Awlia.These animals were subjected to adaptation period for two weeks, after this period animals were weighed, and divided randomly into 3 groups (A, B, and C, 9 heads/ group) of the same number and weight and each group was separately penned. The goat kids groups were fed these diets for 56 days.

three isocaloric and isonitrogenous diets, containing graded levels of sugar cane tops (0%, 10%, and 20%) were formulated. Green fodder (Medicago sativa) was also given at rate of one kg/week/head to avoid vitamin (A) deficiency.

Key word: Sugar cane tops, Carcass Characteristics, Meat Quality Attributes and Sudanese Desert Kids.

المستخلص:

أجريت هذه الدراسة لتقييم صفات وجودة اللحوم لدى ذكورجديان الماعز الصحراوي التي تتغذى على علائق تحتوي علي مستويات مختلفة من رؤوس قصب السكر. تم شراء (٢٧) راس من صغار الماعز الصحراوي الذين تقل اعمارهم أقل عن عام من سوق جبل أولياء المحلى للماشيه و تم نقلها الي حظائر المجترات الصغيرة في كلية التقانة الزراعية و علوم الأسماك بجامعة النيلين– بجبل الأولياء. بعد قضاء فترة الأقلمة الكافية قسمت الجديان عشوائياً إلي ثلاث مجموعات (٩ رأس لكل مجموعة) بمتوسط وزن ابتدائي متساوي وعُلفت المجموعات الثلاث لمدة (٥٦ يوم). المجموعة الأولي رؤوس القصب بها صفر والثانية ١٠% والثالثة ٢٠% . كما تم إعطاء العلف الأخضر بمعدل كجم/ أسبوع / رأس لتجنب نقص فيتامين أ. في نهاية التجربة تم اختيار ثلاثة جديان عشوائيا من كل مجموعة و ذبحها لدراسة خصائص الذبيحة و التركيب الكيميائي للحوم و صفات جودة اللحوم و تقييم جودة اللحوم. أظهرت الدراسة إن إضافة مستويات مختلفة من رؤوس القصب

في علائق التسمين ليس لها اثر معنوي واضح ($P< 0.05$) على خصائص الذبيحة عدا وزن الأمعاء فارغة و وزن الذيل.
الكلمات المفتاحية: رؤوس قصب السكر – صفات و جودة لحوم الذبيحة- جديان الماعز الصحراوى.

INTRODUCTION:

The total population of goats in the world is about 738.2 million heads, while the population of goat in Africa is approximately 218.6 million heads (FAO, 2003). Sudan is considered to be one of the richest African and Arab countries with regard to cattle population estimated as 103,278,000 which included 28,618,000 cattle 39,296,000 sheep, 30,649,000 goats and 4.715,000 camels.(MAFR 2011).

The goat is an important animal for both meat and milk in Africa, Asia and the far east. It is now emerging as an alternative and attractive source of meat in other parts of the world (Devendra, 1981). Goats have been a common source of meat in many tropical and developing countries, and they are more important meat producing animals compared to sheep (Mahgoub and Lodge, 1998). Goat meat with its superior water holding capacity, dark red colour and low fat content could be a good raw material for meat products and it is a healthy food commodity (Babiker *et al.*, 1999). However, consumption of goat meat is much influenced by local customs and religious taboos (Elmuola *et al.*, 1999).

Sudan desert goat represents about 27.1% of the total goat population in the country, ranking second to the Nubian goats (Hassan, 1977). The total meat production from the goat in the world is about 3.8 million tons, while in Africa the total production of meat from goats is about 851,000 tons. The Sudanese goat produces about 118,000 tons of meat per year (FAO, 2003).

The meat from goat is an important source of animal protein, which is not yet fully utilized due to the widely held belief that goat meat is inferior to lamb and mutton because of its strong flavour

(Yagoub, 2004). Gaili *et al*. (1972) compared meat quality for desert sheep and goat and reported no flavour differences. Gaili and Ali (1985) studied the composition of muscular and fatty tissues in goats and stated that goat meat is not inferior to mutton. (Babiker *et al*., 1990) found no significant differences in the eating quality of goat meat and recommended it as a healthy commodity due to its low fat content compared with lamb.

The sugarcane leaves must be taken in consideration, since it is a part of the sugarcane tops. This part have a high crude fiber content (40-42%of dry matter), and the leaves are also rich in soluble carbohydrates. Therefore they are a potential feed resource for ruminant in the dry season (Pate, 1981).

Sugar cane tops is a major by-product of the sugar industry which is often left in the field unutilized after harvest. The sugar cane top consists of three distinct parts: the green leaves (blades), the leaf sheath bundle and a variable amount of immature cane. The yield of tops varies considerably with variety, age at harvest, growing conditions and management practices. It accounts for 16-18% of the total biomass production, or about 28% of the weight of the stalk (Nguyen ThiMui *et al.,* 1996a).

The objectives of this study are :

1. Utilization of available agricultural by-products (sugar cane tops) in animal feed to increase the productivity of these animals and reduce the feed cost.
2. Study the effect of sugar cane tops on the carcass characteristics and meat quality attributes of Sudanese desert kids.

MATERIALS AND METHODS:

Study area: This study was conducted at University Of Alneelain College of Agricultural Technology and fish sciences, Department of Animal Production in Jabal Awila at Khartoum State , about 40 km south of Khartoum.. Which is located in the semi arid- zone between latitudes 15°-40° N and longitudes 32*E.

Experimental animals: Thirty Sudanese desert goat kids were

purchased from the animal market of Jabal Awlia, then transported to the small ruminant pens at the Faculty of Agricultural Technology and Fish Sciences AlNeelain University in Jabal Awlia. Animals were selected according to their age(less than one year) . kids were ear tagged and subjected to an adaptation period of two weeks.

Adaptation period: During this period experimental kids were fed a mixture of experimental diets**.** Experimental kids were vaccinated against septicemia and pests Des Petit Ruminant (P.P.R) and sprayed with an acricide solution against ectoparasites and deworming with thiobenzol as drench solution was performed. The thiobenzol treatment was repeated after 15 days.

Experimental procedure: At the end of the adaptation period the animals were individually weighed and then randomly divided into 3 groups (A, B, and C) of the similar number and weight and each group was separately penned. Each pen was provided with watering and feeding facilities.

Feeds and feeding

Sugar cane tops source: Sugar cane tops was brought from Algunaid Sugar Factory . After sun drying a sample was taken and subjected to a proximate analysis according to (A.O.A.C 1975. Table1). According to this analysis three iso-caloric diets and iso- nitrogenous diets were formulated (Table2).These diets contained graded levels of sugar cane tops (0, 10%, and 20%). The ingredient proportions of experimental diets are given in table(2).

During the feeding period animals were fed the assigned diets *ad-libitum*. The diets were offered in one morning meal at 8a.m. throughout the study period. Green fodder (*Medicago sativa*) was also given at a rate of one kg/animal/week to avoid vitamin A deficiency. The experiment lasted for 60 days.

At the end of the experiment three kids from each group were randomly selected and slaughtered to study carcass yield and characteristics, meat chemical composition, meat quality attributes and subjective evaluation of meat quality.

Data recorded: Carcass characteristics and meat quality attributes data were recorded.

Data analysis: Experimental data were analyzed by analysis of variance techniques applicable to completely random design (C.R.D).

Results and Discussion:

Effect of feeding sugar cane tops on Carcass yield and characteristics of desert goat kids: Carcass yield and characteristics of experimental goat kids are shown in (Table 3). Slaughter weight increased with the increase of sugar cane tops level in the diet. The increase was not significant between animal groups. Also hot, cold and half carcass weight follow the same trend.

This could be attributed to the effect of plant protein source and levels because the energy to some extent was almost the same in all animal groups. The results obtained here were in the same trend with those obtained by Worku, A, et al (2015) in the sheep of Different Levels of Dried Sugar Cane Tops(0, 120, 240, 360 g/head/day).

Effect of feeding sugar cane tops on Whole sale cuts yield of desert goat kids: Table (4) give the yield of whole sale cuts of the experimental goat kids fed different levels of Sugar cane tops. The proportions of whole sale cuts were insignificantly different due to previous justification of the whole experiment.

Effect of feeding sugar cane tops on meat chemical composition and meat quality attributes of desert goat kids: Meat chemical composition data of the experimental goat kids were shown in (Table 5and 6) respectively. Also these parameters follow the same trend of insignificant differences of the tested animal groups.

CONCLUSIONS

It can be concluded that introduction of dry sugar cane tops up to 20% in the diet of male goat kids produced the best carcass characteristics and meat quality attributes.

Recommendations

- More investigations must be carried out to determine the potentiality of sugar cane tops in the diets for meat and milk production.
- More investigations must be conducted to study the nutritional value of sugar cane tops in the animal feed, suitable levels in the diet and economical cost.

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