Dedication

To my dear and kind parents,

wife Budria,

daughters Khadiga, Alaa and Safaa,

brothers,

sisters and colleagues.

Acknowledgement

First, I thank my GOD ALLA who gave me the aptitude and patience to conduct and finish this study. I wish to express my sincere gratitude and appreciations to my supervisor Dr. Mohammed Tag Eldin Ibrahim for his advice assistance and encouragement throughout the study. My great thank and gratitude to my co-supervisor Dr. Muzzamil Atta for his help assistance and useful advises he gave me.

Sincere appreciations are also extended to Dr. Faisal Hassan Ibrahim the Minister of Agriculture, Animal resources and Irrigation and also to Dr. Abdalla Hassan the general manager of Khartoum Animal Resources Services and Exportation Company for their interest and encouragement. Their financial support is greatly acknowledged.

Thanks and gratitude goes to the staff of microbiology laboratory of the Veterinary Medicine and Animal Production, Sudan University Science and Technology. Thanks also go to Artificial Insemination Centre laboratory for allowing me to use their laboratory facilities. In addition, my thanks and gratitude extend to staff of Goat Improvement Project for the assistance and help they provided to me during the experiment. Further thanks goes to Mr. Fathel-Rahman Abdel-Galil for his much help and advises he gave during my research work. In addition, thanks are to my brother Dr. Hamadel-Nil El Garray for his advice and encouragement. Finally, I would like to thank my family and colleagues for the cooperation through my study and research.

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Abstract

This study was conducted at the goat improvement project pens (Hillat Kuku) to investigate the effect of gradual replacement of molasses of diet by groundnut hulls on ruminal environment and microbial activity, feedlot performance and carcass characteristics of the Nubian × Saanin male kids.

27 animals were randomly selected and used in the feedlot trial, 6 of them were slaughtered and used for carcass analysis, another 3 fistulated male kids were used in the degradability trial (for the 3 diets) 3 iso-coloric and iso-nitrogenous diet were formulated. The 3 experimental diet differ in the level of molasses and groundnut hulls used (50% and 10%, 40% and 20% and 30% for treatment 1, treatment 2 and treatment 3 respectively.

For the feedlot trails, the kids fed adlibitum on the three experimental diets for 2 weeks adaptation period followed by 8 weeks experimental period. Data on intakes of D.M., M.E. and C.P., body weight gain and F.C.R. were calculated. At the end of the experiment two males' kids from each diet group were randomly selected and slaughtered to obtain the carcass data such as dressing percentage shrinkage non-carcass percentage as well as the wholesale cuts. For the degradability trials one diet was offered to the three fistulated goats for three days as adaptation period followed by four days experimental periods during which six nylon bags were incubated in the rumen of each goats to be removed after 6, 12, 24, 48, 72 and 96 hours of incubation (one bag at a time from each goat). Samples for the rumen liquor were also taken at the end of each incubation period from the three goats. The rumen pH was recorded and the rest of the samples was kept for

bacterial and protozoan count. This method was done for three experimental diets respectively. Data such as D.M. loss% bacterial and protozoan count per ml were calculated. All the data obtained were analyzed by one-way analysis of variance.

The feedlot performance was not affected by the dietary treatment however; parameters such as final weight, body gain and intakes tended to increase by the increase of molasses and decrease of groundnut hulls. Food conversion ration values showed the opposite trend. The D.M. intake as percentage of body weight of these male kids ranged between 4.11 and 4.5% with no effect due to diet treatment. The diet treatment has no significant effect on the slaughter and empty body weight, gut fill, dressing percentage, shrinkage and non-carcass component, they showed significance in external offal's percentage of the non-carcass component where treatment 1 and treatment 2 were similar and the two were significantly higher than treatment 3. The dressing percentage on slaughter weight basis ranged between 38.5 and 43.7% where that on empty body weight ranged between 46.4 and 52.3%.

The different levels of molasses in the diet affected significantly D.M. loss, rumen pH, bacterial and protozoan count. When molasses level decreased the D.M. loss percentage, rumen pH and protozoan count increased and bacterial counts decreased.

When the D.M. loss percentage regressed on time of incubation according the formula:

$Y = a + b\ (1 - \exp^{-ct})$

Showed the coefficient of determination and the calculated degradability ranged between 20.6 and 30.2 at 0.02 particles per hour flow rate, 16.74 and 26.27 at 0.05 particles per hour flow rate and 40.56 and

24.75% at 0.008 particles per hour flow rate with no significant effect due to diet treatment however it tend to decease with the increase of molasses level in the diet and also decrease with the increase of the flow rate.

The result of this study showed that the high groundnut hulls diet increase the dry matter loss and protozoan counts than the higher molasses diet. It also produced body gain and carcass weight similar to that of high molasses diet which was expensive as in term of feed cost per gram of gain. The result also concluded that the potential for meat production of Nubian × saanin kids is poor when compared to other types of goat reviewed.

خلاصة البحث

تمت هذه التجربة في حظائر مشروع تحسين الماعز بحلة كوكو وذلك لمعرفة أثر إحلال المولاس بقشرة الفول على أداء الحيوان عند التسمين وكذلك على الكائنات الدقيقة في كرش الحيوان مثل البكتيريا ووحيدات الخلية وعلى درجة حموضة الكرش.

تم اختيار عدد (٢٧) جدي صغير (هجين سعانين × نوبي) عشوائياً وتقسيمها إلى(٩) مجموعات ثم تقسيمها إلى ثلاثة مجموعات علقية كل مجموعة تتغذى على نوع واحد من العلائق.

تم تجهيز هذه العلائق على النحو التالي: (٥٠% قشرة فول و١٠% مولاس – ٤٠% قشرة فول و٢٠% مولاس – ٣٠% قشرة فول و٣٠% مولاس) مع إضافة ٢٠% امباز فول و١٩% ردة قمح و١% ملح طعام للعلائق الثلاثة، تعطى العليقة لكل مجموعة غذائية بعد وزنه لفترة كافية ثم يجمع متبقي العلف ووزنه لمعرفة الكمية التي أكلها الحيوان، تسجيل الكمية التي أكلها الحيوان يومياً وذلك بطرح كمية العلف المتبقي من الكمية المقدمة للحيوان.

يتم وزن الحيوان أسبوعيا لمعرفة الزيادة النوعية في الوزن، بعد ذلك يتم حساب نسبة التحول الغذائي لكل عليقة، تم اختيار عدد (٦) جدي عشوائياً بعد وزنها للذبيح لدراسة تحليل النتيجة. تم وزن الدم والجلد والأرجل والرأس وجميع الأعضاء الداخلية ومقارنتها بوزن الذبيحة، تم تفريغ محتويات الأحشاء ووزنها ومقارنة هذا الوزن بوزن الحيوان، تم حساب نسبة الجفاف ونسبة التصافي.

ولحساب نسبة تكسير المادة الجافة تم إحضار عدد(٣) أغنام وعمل فتحة في الكرش لإدخال أكياس نايلون، وإعطاء هذه الأغنام العليقة رقم (١) لمدة ثلاثة يوم للتأقلم ثم بعد ذلك لمدة ٤ أيام، توضع خلالها الأكياس، تكرر هذه العملية ثلاثة مرات، يتم في كل مرة وزن المادة الجافة وضعها في هذه الأكياس، ثم إدخالها في الكرش لفترات مختلفة (٦، ١٢، ٢٤، ٤٨، ٧٢، ٩٦) بعد كل فترة يتم إخراج الأكياس ونظافتها وتجفيفها ثم بعد ذلك توزن لمعرفة الفرق في الوزن وبعد ذلك يتم حساب نسبة تكسير المادة الجافة، تكرر هذه العملية ثلاثة مرات كل مرة تستعمل عليقة واحدة.

تم سحب كمية من محتويات الكرش مع كل فترة زمنية يتم فيها سحب الكيس وذلك لقياس درجة الحموضة وحساب عدد البكتيريا ووحيدات الخلية، تم تجميع هذه المعلومات وتحليلها إحصائيا.

من نتائج هذه التجارب أتضح أن أداء الحيوان لم يتأثر بتغيير نسبة المولاس إلا في حالة الوزن النهائي والوزن المكتسب وأما في حالة كمية الأعلاف المستهلكة فإنها تزيد بزيادة نسبة المولاس في العليقة وذلك خلافاً لنسبة التحول الغذائي التي تتناسب عكسياً مع النسبة المولاس في العليقة.

من الملاحظ في هذه التجربة أن هذه الحيوانات (هجين) تستهلك حوالي (٤,٥ – ٤,١١%) من وزنها دون التأثر بنوع مكونات العليقة.