

Meat Chemical composition and quality attributes of desert goat.

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ABSTRACT

Three groups of desert goat kids were each raised on a complete diet with an energy level of 12.0, 10.0 or 8.0 MJ/kg DM for 150 day.

Dietary energy level had significant effect on the chemical composition and quality attributes of desert goat meat. The meat obtained from carcasses of goats raised on high dietary energy level (12.2 MJ/kg DM) had significantly ($P<0.001$) more fat than that from the low dietary energy group (8.0 MJ/kg DM). The sarcoplasmic and myofibrillar protein concentration was significantly ($P<0.001$) greater in the meat of goats fed the high energy diet.

The meat colour was significantly ($P<0.001$) pale and yellow in the low dietary energy group than in the high one. The high dietary energy level resulted in significantly ($P<0.001$) tender meat than the low energy level.

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INTRODUCTION

Goat meat production systems around the world are extremely diverse and received little scientific attention compared to those of sheep and cattle. The total meat production from African goat and sheep is 1.15 million tonnes, equivalent to 16% of the total world output of these species (FAO, 1991), while in Sudan the annual goat meat production is estimated as 43.000 tonnes (Animal statistic department, Sudan, 1990).

Many studies showed that there are no significant differences on the muscular and fatty tissues composition of goat compared to mutton (Gaili & Ali, 1985). Babiker et al (1990) indicated that chemically and from the point of view of quality, goat meat obtained from young fattened animals is not inferior to lamb. Its superior water holding capacity, darker red colour and low fat content over lambs makes it a good raw material for comminuted meat products and a healthy food commodity.

This study intended to elucidate the effect of the dietary energy level on the chemical composition and quality attributes of Sudan desert goat meat.

MATERIALS AND METHODS

General Procedure:-

Longissimus dorsi (Lumber region) and semi memberaneous muscles were obtained from carcasses of three groups of desert goat (aged 6-9 months) which were raised on complete diets with dietary energy levels (12.0, 10.0 or 8.0 MJ/kg DM), plus Medicago sativa which was given as source of vitamin A at a rate of one kg / head / week over a period of 150 days. Seven carcasses were obtained from

each group. Carcasses were chilled for 24 hour at 4°C and then splitted

along the midline into two sides. Longissimus dorsi and semi memberaneous muscle were then desected from one carcass side only.

Chemical Composition and Meat Quality Determination:-

Proximate muscle composition was determined on fresh muscle sample according to (A.O.A.C. 1975), protein fractionation was performed as in Babiker and Lawri (1983), water holding capacity

according to Grau and Ham (1953), colour measurments were determined on a Hunter Tristimulus Colourimeter Model D25 M2; Hunter Lightness (L); redness (a) and yellowness (b) were recorded.

An Instron model 1000 was used to determine shear force and connective tissue strength on rectangular and cubes obtained from cooked muscle samples.

Data were then statistically analysed according to Snedecar and Cochran (1980).

RESULTS AND DISCUSSION

Chemical Composition of Desert Goat Meat:-

Table 1 presents the meat chemical composition of male desert goats. The high and medium dietary energy level had significantly ($P < 0.001$) more fat, sarcoplasmic and myofibrillar protein concentration and NPN content than the low energy levels.

The high and medium energy levels induced more fat deposition than the low level and this was in accord with carcass fat. The plane of nutrition affected the composition of the muscles and the high plane of nutrition lead to great fat synthesis from carbohydrate (Lawri, 1991). The fat values observed by Babiker et al (1990) for the same goat breed raised on high level of dietary energy, was greater than the

present study, while the sarcoplasmic and myofibrillar protein and NPN values in this study, were comparable to their reported values. **Meat Quality Attributes:-**

Meat quality attributes data shown in Table 2 indicated that the significant differences due to various dietary energy level in this study were observed in the meat colour and shear force only. The low

dietary energy level resulted in a less lightness (L) values in goat meat, a decrease in muscle redness (a) and a significant ($P < 0.05$) increase in muscle yellowness. This pale yellow colouration in goat meat could possibly be due to the poor muscular fat and low myoglobin and haemoglobin content in muscles of animals raised on a low energy level.

Low dietary energy level was found to increase the watery condition of the carcass which was manifested in the drop in its water holding capacity (Table 2). The superior water holding capacity in muscles from the high and medium energy groups could be explained by their high fat, sarcoplasmic and myofibrillar proteins and NPN content (Lawri, 1991).

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