

Original Research Article

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The Nutrient Intake and Utilization of Tree Leaves and Green Forage on Growing Kids

Vivekin Pachauri*

Jawaharlal Nehru Krishi Vishwa Vidyalaya, Krishi Vigyan Kendra Sagar (M.P), India

*Corresponding author

ABSTRACT

An experiment was conducted with fifteen healthy goat kids of 4-6 month of age and divided into three groups. Experimental feeding was done for 90 days during which a metabolic trial was conducted. At the end of 45 days feeding of tree leaves *Albezia lebbek*, *Ficus glomerata* and *Sorghums sudanense*. The DM digestibility was 55.15 ± 0.949 , 54.188 ± 0.980 , 59.34 ± 0.735 ; Crude Protein was 69.47 ± 1.10 , 68.67 ± 0.42 , 69.63 ± 0.84 and Crude Fiber was 35.19 ± 0.83 , 32.44 ± 1.31 , 55.91 ± 1.84 respectively for group I, II and III. The feed conversion efficiencies were, 3.2, 2.6 and 4.6 kg per kg weight gain in for group I, II and III. Mean daily gain in body weight of animals in group I, II and III was 21.78 ± 0.44 , 21.78 ± 0.44 and 25.78 ± 0.54 gram/day respectively showing significant difference among the three groups.

Keywords

Kids, Tree leaves, Fodder

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Introduction

Indian economy has always been influenced by agriculture and animal husbandry and continues to play a major role even in the new millennium. The demand for animal food (milk and meat) has been incessantly increasing for achieving the nutritional satisfaction. The success of livestock farming is greatly dependent on the continuous assured supply of good quality balanced feeds at competitive price. To bridge the gap of demand and supply of feed resources, non-conventional feeds and tree leaves are being widely used to meet the requirements of small

ruminants. In corporation of fodder tree shrubs, having multi facet utility on the grazing land substantially adds to availability of feed resources during lean season besides helping in eco-conservation.

The tree leaves are best utilized in browsing by the goat. Information on nutritional characteristic of different varieties of herbs, shrubs, and tree leaves for different locations is scanty. The present study has been carried out to find out the potential feeding value of the tree leaves and to compare them with the sudan grass by feeding the growing kids with the following objectives-

To study the nutrient utilization of tree leaves in sudan grass by kids.

To study the rate of growth pattern by feeding tree leaves and forage to the kids.

Materials and Methods

For the present study fifteen healthy kids of about 4-6 months of age with a body weight ranging from 10-15 kg were selected. The kids of I and II were fed with adlib Series *Albizia lebbek* and Dumer *Ficus glomerata* tree leaves respectively whereas the kids of group III were fed with sudan grass *Sorghum sudanense*. The feeding of kids was continued for a period of 90 days. At the end of 45 days feeding a metabolic trial was conducted for 6 days on all the kids to study the intake, utilization of nutrients and balance of nitrogen, calcium and phosphorus. The representative samples of the feed offered and the residue left during the metabolism trial were collected for six days for the determination of dry matter intake, proximate principles as per the methods of AOAC. The kids were weighed at weekly interval, average of three days weight was considered for calculating daily gain.

Results and Discussion

The mean dry matter intake (gram) during experimental feeding was 489.28 ± 72.86 , 401.96 ± 47.88 and 827.55 ± 72.38 in group I, II and III respectively which was found to be highly significant difference among the three groups. The organic matter intake was 455.66 ± 68.17 , 325.50 ± 39.14 , 757.84 ± 66.36 gram/day in group I, II and III respectively have significant difference among the three groups. The mean intake of ether extract in group I, II and III was 30.74 ± 4.52 , 16.50 ± 1.96 , 17.63 ± 1.55 gram/day respectively. The data revealed that there was a highly significant difference in the mean intake of

ether extract. The mean intake of total carbohydrates was 339.27 ± 51.12 , 254.56 ± 30.79 , 674.39 ± 58.77 gram/day in group I, II and III respectively and the difference was found to be highly significant among the three groups. The intake of crude fibre in group I, II and III was 131.85 ± 20.96 , 45.32 ± 5.85 , 264.918 ± 23.20 gram/day respectively and there was highly significant difference among the three groups (Table 1). Similarly the mean NFE intake was 207.41 ± 30.15 , 206.17 ± 25.01 , 405.37 ± 52.44 gram/day in group I, II and III respectively which was observed to be a highly significant difference among groups ($P < 0.01$). The average body weight of kids at the beginning and at the end of experiment as well as the total body weight gain along with weekly and daily gain of the experimental animal has been presented in table 2.

Total weekly weight mean of gain in body weight in the three groups (Series) *Albizia lebbek* (group I), Dumer *Ficus glomerata* (Group II and sudan grass *Sorghum sudanense* (group III) was found to be 152.52 ± 3.12 , 152.52 ± 3.12 and 180.54 ± 3.82 gram/week respectively showing significant difference between the groups I, II and III. Mean daily gain in body weight of animals in group I, II and III was 21.78 ± 0.44 , 21.78 ± 0.44 and 25.78 ± 0.54 gram/day respectively showing significant difference among the three groups.

The mean dry matter intake during the present experimental feeding of *Albizia lebbek* leaves was 489.28 ± 72.86 gram/day. *Albizia lebbek* leaves was fed in three different proportion in goats viz., 85:15 T1, 70:30 T2 and 55:45 T3 with dry grass *Sehima heteropogon* and reported the dry matter intake gram/day T1 426.83 ± 30.24 , T2 443.79 ± 38.7 and T3 426.10 ± 9.81 for the three treatments and concluded that the supplementation of *Albizia lebbek* leaves dispersed the intake of mature dry grass in goats.

Table.1 Average nutrient intake gram/day of experimental animals

Attributes	Group I	Group II	Group III
Dry matter intake	489.288 ±72.86	401.96 ±47.88	827.55 ±72.38
Organic matter intake	455.66 ± 68.17	325.50 ±39.14	757.84 ±66.36
Crude protein intake	85.77 ±12.57	54.48 ±6.43	66.04 ±6.07
Ether extract intake	30.74 ±4.52	16.50 ±1.96	17.63 ±1.55
Crude fibre intake	131.85 ±20.96	45.32 ±5.85	264.91 ±23.20
Nitrogen free extract intake	207.41 ±30.15	206.17 ±25.01	405.37 ±52.44
Total carbohydrate intake	339.27 ±51.12	254.56 ±30.79	674.39 ±58.77

Table.2 Weekly and daily body weight gain, feed gain ratio of experimented kids (Mean± SE)

Groups	Initial body Weight	Final body Weight	Weight gain (gm.)	Weekly gain (gm.)	Daily gain (gm.)
I	12.200	14.16	1.96	152.52±3.12	21.78±0.44
II	11.72	13.96	1.96	152.52±3.12	21.78±0.44
III	11.880	14.00	2.32	180.54±3.82	25.78±0.54

The mean dry matter intake of *Ficus glomerata* tree leaves was 401.96 ±47.88 as reported by others (Balaram and Gupta, 1990). Dry matter intake of *Ficus nemoralis* (Dudhilo) was 1.6 ±0.06 kg/day in calves, which is quite low. They opined that high tannic acid content in Dudhilo leaves might be responsible for reduced palatability reported by other workers (Jain, 1998). The mean dry matter intake of sudan grass (*Sorghum sudanense*) under experimental feeding was 827.55 ±72.38.

The findings were in close agreement with the other workers (Singh *et al.*, 1998). The dry matter intake of goats fed with (Sola grass) *Aexhynoner indica* is gram/day 1021.67 ±61.83. The higher dry matter intake was probably due to the selective feeding habit of goats especially due to the selective feeding habit of goats especially for the tenderous apical parts of the plant. It can be concluded that goats can be reared on (Sola grass) without any deleterious effect on their health. The findings were in close agreement with the other workers (Singh *et al.*, 1998).

Daily body weight gain

The result in the present study of mean daily gain in body weight of animals in group I, II, and III was 21.78 ±0.44, 21.78 ±0.44, 21 and 25.75 ±0.54 respectively showing significant difference among three groups. The result in the present study are in agreement with the observation made by workers (Singh *et al.*, 1998), reported 25 ±6.45 change in body weight gain/day of goats fed on (Sola grass) *Aexhynoner indica* which might be due to higher digestibility of nutrients. The nutritional evaluation of Guinea grass *Penicum maximum* in goats reported lower DM, CP, EE, Ash 35.42%, 3.65%, 1.50%, 7.49% and higher CF and TCHO 39.13%, 87.36% respectively while OM values were comparable 92.51% against the corresponding reported values 64.1%, 8.24%, 2.14%, 8.36%, 32.04%, 81.26%, 91.64% by others (Singh *et al.*, 1987). The daily voluntary DM intake of mixed Jungle grass was fed to the goats was 52.68 gram/kg W^{0.75}. The mixed Jungle grass met the maintenance requirement of goats in terms of DCP, calcium and phosphorus but

could not provide enough DM and TDN, thus requiring supplementation with energy rich feeds as reported by many workers (Tiwari *et al.*, 1996).

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