

SELECTIVITY AND PALATABILITY OF TREE FODDERS IN SHEEP AND GOAT FED BY CAFETERIA METHOD

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Abstract: Preference among tree fodders in four Madras red breed of sheep and four kanni breed of goats fed with four locally available tree species viz. *Albizia lebbek*, *Gliricidia sepium*, *Leucaena leucocephala* and *Inga dulce* was studied through intake studies by cafeteria method for a period of 35 days. The nutrient composition of the tree leaves was analysed. *Leucaena leucocephala* was mostly preferred by sheep and goats and the consumption of tree leaves was 24.41 ± 0.67 and 33.90 ± 3.27 g DM/kg metabolic body weight per day respectively. In both sheep and goat, palatability of *Leuceana leucocephala* and *Inga dulce* were ranked first and second respectively. *Gliricidia sepium* was ranked third in goats followed by *Albizzia lebbeck* in where as *Albizzia lebbeck* was ranked third in sheep followed by *Gliricidia sepium*. From this study it was concluded that leaves of *Leuceana leucocephala* could serve as a better tree fodder for small ruminants.

Keywords: Tree fodder, nutrient composition, sheep, goat, preference studies.

Introduction

Feed and fodder availability among Asian countries is not sufficient to meet even dry matter requirement of growing ruminant population, there is need to explore new feed resources which do not compete with human feed chain (Raghuvansi et al., 2007). Tree forages form an integral part of ruminant feeds and use of tree forages as components of diets is a widespread practice in many countries.

Fodder tree leaves are an alternative source of livestock feeding and tree leaves have the potential for alleviating some of the feed shortages and nutritional deficiencies for small ruminant and important component of goats and sheep diets (Kamalak et al., 2004). Fodder trees are an important source of supplementary protein, vitamins and minerals in developing countries (Baumer, 1992). Tree fodders are nutritious like leguminous fodder crop (Akram et al., 1990). Trees leaves play an important role in the nutrition of grazing animals in area where few or no alternatives are available (Meuret et al., 1990). Trees rages used as protein and energy sources for small ruminant (Singh et al., 1989) because the secondary plant

compounds (Tannins) present in tree leaves, enables the ruminants to receive higher levels of dietary protein at post rumen for digestion and absorption (Leng, 1997).

The use of multipurpose trees has been advocated in the tropics for several reasons. These include: supply of fodder to livestock; wind breaks; providing protection and supplying nutrients to the soil and therefore to plants; supplying fuel for cooking and heating; acting as live fences; and providing shade to both man and livestock. Hence a study was conducted to determine selectivity and palatability preferences of four tree fodders among sheep and goats.

Materials and Methods

Location, animals and feed

The palatability experiment was conducted at Institute of Animal Nutrition, Kattupakkam in Madras red breed male sheep and kanni breed female goats by selecting four animals in each species. Two years old sheep and goat with an average body weight of 25.13 ± 0.59 kg and 28.20 ± 0.20 kg respectively were used in this experiment. The tree fodder species identified in the study were *Albizia lebbek*, *Gliricidia sepium*, *Leucaena leucocephala* and *Inga dulce* which was fed by cut and carry method. Bajra Napier hybrid grass was provided as basal fodder to all the animals.

Nutrient analysis of tree fodder species

Tree fodder species were collected and air dried for analysis of proximate composition. Materials were ground to pass through a 1.25 mm screen in a laboratory hammer mill and stored in air tight bottles. Chemical components such as crude protein, total ash, ether extract, crude fibre and nitrogen free extract were determined by standard methods (AOAC, 1990).

Intake study by cafeteria method

Animals were confined in separate pens of size (2 x 2m). Branches of the individual tree fodder species were collected and tied separately inside the pen by cafeteria method during the adaptation period of seven days. The animals were dewormed prior to the start of the experiment. After the adaptation period of seven days the palatability trial was conducted for period of thirty five days.

Results and Discussion

Chemical analysis

Table 1: Proximate composition (% DMB) of fodder trees

Proximate composition	<i>Leucaena leucocephala</i>	<i>Gliricidia sepium</i>	<i>Albizia lebeck</i>	<i>Inga dulce</i>
Crude protein	18.83	17.14	18.41	19.89
Crude fibre	21.40	21.04	21.42	20.90
Ether extract	5.56	4.01	4.78	5.61
Total ash	8.15	9.14	8.42	6.12
Nitrogen free extract	48.46	48.67	46.97	47.48

The crude protein content of tree leaves was found lower in this study when compared to the values reported (Mtenga *et al.*, 1991). The ash content of *Leuceana leucocephala* (8.15%) was lower than that reported by (Kishore *et al.*, 1987). The crude protein content of *Albizzia lebbeck* (18.41%) was slightly lower value as that reported by (Atiya *et al.*, 2011)

Table 2: The ranking of palatability of tree fodders in goat and sheep based on the DM intake ($\text{g}/\text{kg W}^{0.75}$) by preference method Intake studies

Tree fodders	Goat		Sheep	
	DM intake ($\text{g}/\text{kg W}^{0.75}$)	Ranking	DM intake ($\text{g}/\text{kg W}^{0.75}$)	Ranking
<i>Leuceana leucocephala</i>	33.90±3.27	I	24.41±0.67	I
<i>Gliricidia sepium</i>	18.56±1.61	III	13.15±1.15	IV
<i>Albizia lebeck</i>	17.82±1.67	IV	14.59±0.55	III
<i>Inga dulce</i>	25.14±1.47	II	23.83±1.56	II

In sheep and goat, first preference among the tree protein sources was *Leuceana leucocephala* as indicated by DMI, 33.90±3.27 and 24.41±0.67 g /kg $\text{W}^{0.75}$ respectively and this agrees with the findings of Semenye et al (1991). This could be due to the presence of secondary plant metabolites such as *beta-carotene* and *xanthophyll* in *Leucaena* as reported by Meulen et al (1979). This study revealed that *Albizia lebeck* was least preferred tree fodder in goats and *Gliricidia sepium* in sheep thus indicating that theses fodders could be fed first followed the most palatable tree fodder to improve / increase the dry matter intake as reported by Semenye et al (1991).

Conclusion

Leuceana leucocephala is considered as the best among the tree fodder species in sheep and goat based on the selectivity, palatability and level of DM intake.

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