

CHEMICAL COMPOSITION OF THORNY TREE LEAVES AVAILABLE DURING DRY SEASON IN NORTH WESTERN ZONE OF TAMIL NADU FOR GOATS

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Abstract: The commonly available thorny tree leaves in North Western zone of Tamil Nadu viz *Pithecolobium dulce*, *Acacia leucophloea*, *Zizyphus mauritiana* and *Zizyphus oneophila* were analyzed for proximate principles and gross energy during summer months. The per cent DM, CP, CF, EE, TA, NFE and GE (Kcal/kg) contents were ranged from 92.55 to 94.45; 11.70 to 21.58; 13.62 to 24.56; 1.06 to 7.18; 8.22 to 11.91; 41.54 to 55.62 and 4007.83 to 4269.50 respectively. These plants were found to be good sources of all essential nutrients. Hence they can be used as fodder for grazing goats to provide nutrients for maintenance and growth and to meet the demands throughout the year in North-Western Zone of Tamil Nadu.

Keywords: Thorny tree leaves, proximate principles, Gross energy, fodder.

Introduction

Tree fodders are important in providing nutrients to grazing ruminants in arid and semi-arid environments where inadequate feeds are a major constraint for livestock production (Rai and Samanta., 2007). The potentials of trees and shrubs are the alternative fodder resources in ruminants especially during the dry season of the year when the scarcity of feed to ruminant is aggravated (Okunade et al., 2014). Tree leaves are considered as useful protein supplements to straw and low protein fodders. Shrubs and trees are the main source of roughage for goats. The farmers in the North Western zone of Tamil Nadu are mainly involved in sheep and goat rearing. Though many varieties of tree fodders are traditionally fed to livestock, only a limited number of them have been analyzed chemically. Certain thorny trees are ever green even in summer months. But the information on chemical compositions are scanty in literature. Hence the commonly available thorny tree leaves during summer months of North Western zone of Tamil Nadu were analysed for chemical composition in order to document and further exploitation for feeding goats.

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Materials and Methods

Six samples each of the commonly available thorny tree leaves in North Western zone of Tamil Nadu viz *Pithecolobium dulce* (Kodukapuli), *Acacia leucophloea* (Velvel), *Zizyphus mauritiana* (Elanthai) and *Zizyphus oneophila* (Karamul) were collected, sundried and analysed for proximate principles (AOAC, 2000). Samples were analyzed for their proximate principles viz. crude protein (CP), ether extract (EE), crude fibre (CF) and total ash (TA) and nitrogen-free extract (NFE) was calculated. Nitrogen, for calculating the crude protein, was estimated using “Kjeltec system” (Model No.1002 Tecator, Sweden), ether extract using “Soxtec” system (Model No.1043, Tecator, Sweden), crude fibre using “Fibertec system” (Model No 1020, Tecator, Sweden) and gross energy (GE) using Bomb Calorimetry. All the values estimated were expressed as percentage on dry matter basis (DMB).

RESULTS AND DISCUSSION

The per cent DM, CP, CF, EE TA and NFE contents of leaves of *Pithecolobium dulce*, *Acacia leucophloea*, *Zizyphus mauritiana* and *Zizyphus oneophila* are presented in Table 1. The dry matter ranged from 92.55 ± 0.36 in *Acacia leucophloea* to 94.45 ± 0.33 in *Zizyphus oneophila*. The crude protein ranged from 11.70 ± 0.22 in *Zizyphus mauritiana* to 21.58 ± 0.46 in *Pithecolobium dulce*. The GE (KCal/kg) was observed to be 4269.5 ± 35.21 , 4050.66 ± 50.72 ; 4235.66 ± 43.37 , and 4007.83 ± 53.56 respectively. The leaves of Elanathai were comparatively low in CP and CF. Kodukapuli and Elanthai leaves contained high levels of EE. These values correlated well with the results reported by Amanullah et al., (2006) for *Acacia leucophloea* and *Zizyphus mauritiana*. The results of this study also agreed with the values reported by Nijidda (2012) for various *Zizyphus* species for ruminant feeding. The common thorny tree leaves were observed to be good sources of nutrients (protein, carbohydrates, fibre) and hence could be used as supplementary or main fodder for grazing goats to meet the nutrient requirements for maintenance and growth throughout the year.

Table 1: Proximate composition and Gross energy of thorny tree leaves available in North Western Zone of Tamil Nadu

Tree leaves	DM (%)	CP (%)	CF (%)	EE (%)	TA (%)	NFE (%)	Gross Energy (Kcal/kg)
<i>Acacia leucophloea</i> (<i>Karuvel</i>)	92.55 ± 0.36	16.20 ± 0.40	24.56 ± 0.35	1.98 ± 0.18	8.22 ± 0.27	49.03 ± 0.27	4050.66 ± 50.72
<i>Pithecolobium dulce</i> (<i>Kodukapuli</i>)	93.48 ± 0.45	21.58 ± 0.46	17.77 ± 0.54	7.18 ± 0.26	11.91 ± 0.22	41.54 ± 0.49	4269.50 ± 35.21
<i>Zizyphus mauritiana</i> (<i>Elanthai</i>)	93.45 ± 0.36	11.70 ± 0.22	13.62 ± 0.21	7.16 ± 0.20	11.91 ± 0.22	55.62 ± 0.48	4235.66 ± 43.37
<i>Zizyphus oneophila</i> (<i>Karamul</i>)	94.45 ± 0.33	19.92 ± 0.45	18.05 ± 0.50	1.06 ± 0.72	9.46 ± 0.18	51.51 ± 0.85	4007.83 ± 53.56

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