International Journal of Science, Environment and Technology, Vol. 5, No 5, 2016, 3160 – 3163
ISSN 2278-3687 (O)
2277-663X (P)

DETERMINATION OF NUTRITIVE VALUE OF CO-4 GRASS SUPPLEMENTEDOIL SEED CAKES IN SHEEP

P. Pavan Kumar, M. Venkateswarlu*, N. NaliniKumari, A. Sarat Chandra[1], T. Raghunandan[2], D. Nagalakshmi and G. Alexander
P.V. Narsimha Rao Telangana Veterinary University
Department of Animal Nutrition
[1]Department of Livestock Production and Management, College of Veterinary Science, College of Veterinary Science, Rajendranagar, Hyderabad, Telangana State, India
[2]Associate Dean, College of Veterinary Science, Korutla, Karimnagar, Telangana State
E-mail: malisetti_vr@yahoo.co.in , malisettyv46@gmail.com (**Corresponding Author*)

Abstract: An experiment was conducted by feeding sole CO-4 grass (Napier x Bajra fodder) *adlibitum* (T1), CO-4 grass *adlibitum* + 150g crushed maize grain (T2), CO-4 grass *adlibitum* + 150g maize grain + 125g GNC (T3) and CO-4 grass *adlibitum* + 150g maize grain + 125g CSC (T4) to determine the nutritive value in sheep. Results revealed that, DCP content of T3 was highest ($P<0.05$) than T4 followed by T2 and T1 ration. TDN content of T3 and T4 was significantly higher ($P<0.05$) than T2 and T1 ration. However, there was no significant ($P>0.05$) difference in TDN content between T3 and T4 rations. The DE and ME values were also significantly ($P<0.05$) different among four rations. DE and ME (MJ/kg DM) values in T3and T4 rations were significantly higher ($P<0.05$) and comparable with each other followed by T2 and T1 rations. Based on the results it is concluded that, supplementation of oilseed cakes with CO-4 grass had increased the nutritive value of rations and provided the maintenance ration to adult sheep.
Keywords: CO-4 grass, maize grains, groundnut cake, cottonseed cake, nutritive value, sheep.

INTRODUCTION

Nowadays ruminant animals are being fed with different cultivated perennial/annual green fodder grasses to increase their production potential in India. The CO-4 variety of hybrid Napier fodder grass was developed by crossing between Bajra (*Pennisetumglaucum*) and Napier grass (*P.purpureum* Schumach) and is mostly cultivating across India (Vijayakumar *et al.*, 2009). In various research findings, it is observed that CO-4 yields more bio-mass in comparison to CO-3 and other varieties of Hybrid Napier grasses. However, the data on nutritive value of recently developed CO-4 fodder grass for ruminant animals is scanty. Therefore, an attempt was made to find out nutritive value of CO-4 grass supplemented with or without energy and protein sources in native sheep.

*Received Sep 2, 2016 * Published Oct 2, 2016 * www.ijset.net*

MATERIALS AND METHODS

The grown up CO-4 fodder grass (Photo plate) was harvested on 70th day after first planting of fodder slips and was used for experimental work as a freshly chopped. Twenty four adult rams of same age and comparable body weights have been selected and were randomly distributed into four experimental groups of six animals each in a complete randomized block design in such a way that, the body weights were similar in the four groups. Solvent extracted groundnut cake and cotton seed cake were used as protein sources with crushed maize grain as the common energy source. The experimental rams were fed with sole CO-4 fodder grass *ad libitum* (T1), CO-4 fodder grass *ad libitum* + 150g crushed maize grain (T2), CO-4 fodder grass *ad libitum* + 150g crushed maize grain + 125g groundnut cake (T3) and CO-4 fodder grass *ad libitum* + 150g crushed maize grain + 125g cotton seed cake (T4). The roughage and concentrates of the ration were fed separately. A digestion trail was carried out in these experimental adult male sheep to determine the digestibilites of various nutrients so as to estimate nutritive values and the feed and faecal samples were analysed as per the standard procedures. Statistical analysis of the data was carried out according to the procedures suggested by Snedecor and Cochran (1994).

RESULTS AND DISCUSSION

The results of the experiment showed that**,** DCP contents were significantly ($P<0.05$) different among four experimental rations. DCP content of T3 was highest ($P<0.05$) than T4 followed by T2 and T1 ration (Table 1). Pratap Reddy *et al*. (1989) reported increase in DCP value when concentrate was supplemented to basal forage rations. Varaprasad *et al*. (1995) in lambs fed Co-1 forage, Devasena and Krishna (1996) in lambs fed colonial guinea grass observed that, supplementation of concentrate or legume forage to basal diet increased the DCP content of the ration. A significant ($P<0.05$) difference was observed in TDN content of four CO-4 grass based rations in sheep (Table 1). TDN content of T3 and T4 was significantly higher ($P<0.05$) than T2 and T1 ration. However, there was no significant difference ($P>0.05$) in TDN content between T3 and T4 rations. This might be due to high energy and protein content of concentrate ingredients than the CO-4 fodder grass alone. Thesenutritive values were in accordance with the reports of Vidhyarthi and Sharma (2000), who observed the DCP and TDN values of 6.87 and 62.66 per cent respectively for oat fodder fed to rams. Pratap Reddy *et al*. (1989) reported increase in TDN value when concentrate was supplemented to basal forage rations. These results were also corroborating with the findings of Varaprasad *et al*. (1995) in lambs fed Co-1 forage and Devasena and Krishna (1996) in

lambs fed colonial guinea grass supplemented with concentrate and/or legume fodder. Vidyarthi and Sharma (2000) observed the nutritive value of 6.87 per cent DCP and 62.66 per cent TDN in oat fodder in rams. Further they reported that green fodder could meet the maintenance requirement of rams. The average DCP and TDN values of CO-1 fodder for Nellore brown rams were 3.07 and 52.07, respectively (Varaprasad *et al.* 1995). Chandra *et al.* (2012) reported DCP and TDN content of the NB-21 fodder as 7.10 and 52.25 per cent, respectively in goats. NB-21 variety of hybrid Napier grass met the digestible crude protein requirement of the goats for maintenance. Supplementary feed may be offered to bridge the deficit in energy requirement. Based on the results it is concluded that, 6.33 and 50.41 per cent of DCP and TDN, respectively is determined for sole CO-4 grass fed sheep and the supplementation of oilseed cakes with CO-4 grass had increased the nutritive value of rations in adult sheep.

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Table 1: Nutritive value of different CO-4 fodder based rations in sheep

Parameter	Ration				SEM
	T1	T2	T3	T4	
Digestible crude protein-DCP (%)	6.33±0.10[a]	7.04±0.07[b]	11.47±0.07[d]	8.69±0.02[c]	0..41
Total digestible nutrients-TDN (%)	50.41±0.92[a]	55.58±0.78[b]	60.38±0.63[c]	60.13±0.21[c]	0.91
Digestible energy (MJ/kg DM)	9.30±0.17[a]	10.25±0.14[b]	11.14±0.12[c]	11.09±0.04[c]	0.17
Metabolisable energy (MJ/kg DM)	7.63±0.14[a]	8.41±0.12[b]	9.14±0.10[c]	9.10±0.03[c]	0.14

[a, b,c,d] values with different superscripts in a row differ significantly (P<0.05)
The DE and ME values were calculated by multiplying TDN (kg) with factors 18.45 and 15.13, respectively (NRC, 1978)

Photo plate: CO-4 fodder grass used for the experiment