

Nutritional Evaluation of Kashat (*Coix Lacryma-jobi* L.) Grass in Konkan Kanyal Goats

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ABSTRACT: Nutritive value of Kashat (*Coix lacryma-jobi*) grass was assessed in Konkan Kanyal goat. The Kashat grass contained DM-27.00, OM-89.80, CP-11.59, CF-24.78, EE-2.33, Ash-10.2, AIA-7.8, Ca- 0.54 and P- 0.37 per cent on DM basis. Dry matter intake was 4.36 kg/100 kg body weight or 82.83 g per kg metabolic body weight. Digestibility of OM, DM, CP, EE, CF, and NFE, was 61.62, 55.32, 60.21, 58.22, 73.86 and 56.75 per cent respectively. The nutritive values of Kashat grass in terms of DCP and TDN in goats were observed as 6.98 and 57.16 per cent. Nutrients retention per day for Nitrogen, Calcium and Phosphorus was 5.01, 0.95 and 0.81 g/day, respectively. It can be concluded that Kashat grass could serve as a good fodder for maintenance in growing bucks without any deleterious effect on health.

Key words: Kashat (*Coix lacryma-jobi*) grass, Konkan Kanyal goats, Digestibility, Nutrients, Nutritive value.

INTRODUCTION

In the Konkan region where about 39 per cent fodder is crop residue that to mostly in the form of rice straw and the remaining about 60 per cent is bulk formed by grasses. This indicates that entire bulk has very poor nutritive quality and that reflects in the animal health and productivity. In Konkan region large vegetation is available still today, which can provide green fodder of good quality. About 70 per cent of total expenditure on goat rearing is on feeding. Goats eat almost of everything. Goats are called as best browsers

Kashat is a very useful and productive grass increasingly viewed as a potential energy source. Before Zea it became popular in South Asia. Coix was rather widely cultivated as a cereal in India. Still taken as a minor cereal, it is pounded, threshed and winnowed, as a cereal or breadstuff. The pounded kernel is also made into a sweet dish by frying and coating with sugar. It is also husked and eaten out of hand like a peanut. Beers and wines are made from the fermented grain. Kashat (*Coix lacryma-jobi* L.) is available grass of Konkan region during rainy months. It is considered as good source of nutrient supplement for small ruminants. Its common name

is Kashat with botanical name *Coix lacryma-jobi* L. and family *Graminae*.

MATERIALS AND METHODS

Four male goats (5-7 month age; avg. body weight 11.60 kg) were selected for a metabolic trial. To maintain the health of the animals at optimum level, they were placed in a clean and well ventilated byre with hygienic conditions. The house was disinfected with Butox (0.5%) a week prior to the start of the trial. The grass fed three times daily without any supplement for a period of 90 days. Clean and wholesome water was offered to each animal twice a day. The representative samples of grasses offered and refusal were collected and quantified during the experimental period. Thereafter, 7-days metabolism trial was conducted using metabolic cages to assess the nutritive value of grass. The faeces and urine were collected and representative samples were processed and preserved for chemical analysis. Samples of grass and faeces were analyzed for proximate principles, Calcium and Phosphorus AOAC, 1995 [1]. Urine samples were also analyzed for Nitrogen. The Calcium and Phosphorus in feed, faeces and urine was determined as per method of AOAC 1995 [1].

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RESULTS AND DISCUSSION

The chemical composition on %DM basis of Kashat (*Coix lacryma-jobi*) grass fed to goats was 27.00% DM, 89.80 % OM, 11.59% CP, 2.33% EE, 23.27% CF, 52.10% NFE, 8.90% TA, 2.23% AIA, 0.54% Ca and 0.37% P. It indicated that grass was rich in CP and low in CF and the proximate composition of this grass was higher to that earlier findings. The comparable value of dry matter was reported by Godase 2005 [2] in Hybrid Napier as 21.8 per cent. The lower value of DM (11.3%) was reported by Jakhmola and Pathak 1988 [3] in Dinanath grass, The CP was observed to be higher in comparison with Aregheore 2001 [4] in Batiki grass and Signal grass as 9.4 and 8.3 per cent, respectively, Jokhmola and Pathak 1988 [3] reported CP value in Dinanath grass as 8.1 per cent, Murugan 2002 [5] in Sorghum as 7.7 per cent, Sharma 1998 [6] in rice straw as 6.50 per cent., The higher value of crude fibre was reported by Aregheore 2001 [4], Godase 2005 [2] and Verma [7] in Batiki grass 35.2 per cent, Guinea grass 33.6 per cent and Signal grass 30.9 per cent, Hybrid Napier 39.13 per cent, Dinanath grass 34.1 per cent and Jungle rice 33.57 per cent, respectively The value of NFE reported by Aregheore 2001 [4] and Godase 2005 [2] in Batiki grass was 40.9 per cent, Guinea grass 40.9 per cent and in hybrid Napier 45.45 per cent, respectively were lower than finding, The voluntary intake of DM (Table1) by goats was 569.89 g/day (4.36% of body weight or 82.83 g/kg W^{0.75}). The findings observed in this study were lower with Mondel *et al.* 2013 [8], who reported the dry matter intake as 717.4, 787.5, and 821.2 (g/d) for different treatment group's viz., I, II and III, respectively in Barbari kids. The present finding in respect to the consumption of Kashat grass by goats indicates higher palatability of Kashat grass to goats. The digestibility coefficients for OM, DM, CP, EE, CF and NFE were, 61.62 ± 0.48, 55.32 ± 0.61, 60.21 ± 0.75, 58.22 ± 0.66, 73.86 ± 0.98 and 56.75 ± 0.22%, respectively However, The higher dry matter digestibility coefficients reported by Burte *et al* 2008 [9] in Bhend tree leaves as 68.78 ± 4.88 per cent.; The lower DM digestibility of 48.55 ± 3.59 per cent in Guinea grass Tiwari *et al.*, 1996 [10]; While Das and Ghosh 1998 [11] reported as the higher values of CP digestibility coefficients as 69.51, 69.89, 70.58 and 69.37 per cent for treatment I, II, III and IV, respectively.; CF digestibility of 45.28 per cent in Stylo hay Singh, 2001 [12] and NFE digestibility of 65.40 per cent in Sorghum Sudan grass Sawal and Sharma., 2009 [13], respectively. The DCP and TDN value in Kashat grass was 6.98 and 57.16 respectively. The higher value of

DCP reported by Buruah *et al* 2005 [14] in Kanchan tree leaves in goat as 8.79 ± 0.24 per cent. Also the higher value of DCP reported by Mane *et al* 2011 [15] in Mulato in goat as 9.22 per cent. Das *et al* 2005[16] reported lower value of DCP in masoor straw based ration in sheep and goat as 3.59 per cent and 3.62 per cent The comparable value of TDN reported by Vidhyarthi and Sharma 2000 [17] and Murugan 2002 [6] in Oat fodder and Sorghum fodder as 62.66 ± 0.28 and 65.37 per cent. Das *et al* 2005 [17] reported lower value of TDN in masoor straw based ration in sheep and goat as 47.9 per cent and 50.6 per cent.. The DM, DCP and TDN intake of Kashat grass by goat was adequate to meet the requirement as indicated by moderate increase in body weight (16.44 g/day).

Table 1
Intake and digestibility of nutrients in goat fed Kashat grass

Attributes	Mean ± SE
Dry matter intake	
g/day	569.89
% body weight	4.36
g/kg W ^{0.75}	82.83
Digestible crude protein Intake	
g/day	39.78
g/kg W ^{0.75}	5.78
Total digestible nutrient Intake	
g/day	325.78
g/kg W ^{0.75}	47.34
Nutrient digestibility (%)	
Dry matter	55.32 ± 0.61
Organic matter	61.62 ± 0.48
Crude protein	60.21 ± 0.75
Ether extract	58.22 ± 0.66
Crude fiber	73.86 ± 0.98
Nitrogen free extract	56.75 ± 0.22
Nutritive value (%)	
Digestible crude protein	6.98
Total digestible nutrients	57.16

Intake, outgo and balance of Nitrogen, Calcium and Phosphorus are presented in the Table 2. Higher digestibilities of feed were reflected in the balance of nutrients and retention of nitrogen was 5.01, calcium

Table 2
Balance (g/day) of N, Ca and P in goat fed Kashat grass

Parameters	Nitrogen	Calcium	Phosphorus
Intake			
g/day	10.57	3.08	2.11
Voided			
Faeces (g/day)	4.20	1.41	0.81
Urine (g/day)	1.36	0.72	0.49
Retention			
g/day	5.01	1.22	0.81
Retention (g/kg) W ^{0.75}	0.72	0.14	0.12

0.95 and phosphorus 0.81 g per day. The calcium and phosphorus requirements (Ranjhan, 1998) for maintenance of goat (15 kg) are 1.1 g and 0.7 g per day.

CONCLUSION

It is concluded that Kashat grass can be fed alone to goat not only for maintenance but also for growth. The grass had DCP 6.98 per cent and 57.16 per cent TDN showing good source of protein and energy for goat feeding. The Kashat (*Coix lacryma-jobi*) grass is palatable and could be used as an alternative feed resource for goat.

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