Use of Monsoon Herbage (Amaranthus spp.) in Complete Feed Block for Sheep Feeding

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Introduction

Favourable climatic condition and faster vegetation growth during monsoon season leads to abundance of forage production, which remained mostly unutilized by the grazing herbivores. Chaulai (Amaranthus spp) is one of the local green biomass that grows very fast after first monsoon shower and is not preferably grazed in comparison to other available grazing resources during monsoon. A huge quantity (dry biomass yield of approximately 10-15 Q/ha) of this biomass is therefore gone waste in due course, not being harvested or utilized. This plant is quite rich in protein (CP 10-14%) with succulent leaves and tender stems and has varying palatability in sheep, goat and cattle. Therefore an experiment was conducted to utilize Chaulai herbage in sheep feeding after drying, chaffing and incorporating in complete feed block (CFB).

Materials and Methods

Chaulai was harvested afresh from the field and dried on wire mesh hanging in a shed with asbestos roof for 3-4 days,chaffed and used for making of complete feed block (CFB). Cenchrus hay was replaced at 0, 20 and 40% levels with Chaulai hay, and the final proportion in the CFB was 0, 13 and 26 %. Thus, the overall composition of CFB was concentrate 30, roughage 65 and molasses 5 percent. In chaulai incorporated CFB the oilcakes were withdrawn from concentrate by 45 and 100 percent to make these CFB isonitrogenous.Feeding trial was conducted on twenty seven adult ewes divided randomly into three groups of nine each and were fed ad libitum CFB in individual pen for 45 days with provision of ample supply of drinking water round the clock. Daily feed intake and weekly body weight of each ewe was recorded. A metabolic trial with four days adaptation and six days collection period was conducted on six ewes from each treatment groups after 35 days of experimental feeding. Rumen liqueur samples were collected at the end of the metabolic trial from each ewe at 0 and 4 hour post feeding for studying the rumen metabolites. Urine samples were analysed for purine derivatives as a measure of microbial protein synthesis (IAEA, 1997).

Results and Discussion

Inclusion of Chaulai at 13 and 26 % replaced 45 and 100% of oil cakes from concentrate portion to make CFB isonitrogenous. It had 10.2% CP and contributed to an average of 11.1% CP in all the CFB. This level of CP in CFB is considered enough for maintenance requirement of the ewes (ICAR, 2013). Incorporation of Chaulai lowered the fibre fractions and lignin content and increased the total ash contents of CFB. Animals consumed daily quota of feed offered and there was easy acceptability of CFB from day one as evidenced from intake of DM from Chaulai incorporated CFB. There was similar DM and OM digestibility among the groups. Intake of DM, DCP and ME was similar in all the groups which reflected with no significant difference in average daily gain among the groups. All the ewes were in positive nitrogen balance and no significant difference was observed between the groups. Rumen pH, total nitrogen, TCA precipitable N and rumen ammonia level reduced with the increased level of Chaulai hay in CFB. Excretion of purine derivatives and microbial protein synthesis revealed non-significant difference between the groups. A tendency towards better microbial protein synthesis with relatively higher efficiency (microbial N/kg DOMI) was observed in Chaulai fed groups. Excretion of urinary purine derivatives is positively correlated with the level of feed and is an indicator of microbial protein supply and nutritional status of animals (Singh *et al*., 2007).

Table 1: Body weight change and plane of nutrition

Parameter	**CFB-I**	**CFB-2**	**CFB-3**	**SEM**
Initial weight (kg)	40.1	39.1	39.7	1.61
Final weight (kg)	41.5	40.3	41.0	1.76
Weight Change (kg)	1.41	1.21	1.31	0.25
Weight change/day (g)	50.3	43.4	46.9	
Plane of nutrition (g/d) Dry matter intake	1084	1047	1095	22.1
Organic matter intake	958	916	954	18.4
Crude Protein intake	130	123	125	2.49
Digestible Crude protein Intake	44.7	40.2	39.0	0.79
ME Intake (MJ)	9.1	9.1	10.9	0.25
DCPI (g)/MJ	4.93	4.45	3.57	0.21

Conclusion

It can be concluded that Chaulai hay can be included in CFB for the feeding of sheep up to the level of 40% with the replacement of conventional roughage sources without any averse effect on voluntary feed intake, nutrient digestibility, plane of nutrition coupled with better microbial protein synthesis.

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