Evaluation of nutritive value of berseem (*Trifolium alexandrium*) on Garole sheep

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ABSTRACT

A balance trial was conducted to study the nutritive value of Berseem at higher ages using Garole sheeps as an experimental material. The other objective wasto examine the feasibility of maintaining sheep with this when availability of other green fodder become limited. The chemical composition of the experimental fodder showed that it contained CP 14.5%, CF 19.7%, EE 1. 2%, NFE 51.9% and total ash 12.7% .Average DM consumption /ram/day was 296.3±7.9 gm. The digestibility co-efficients were 73.07±3.11; 87.40±1.90; 72.07±1.95; 53.81±2.55%; 72.51±1.72 and 66.41±2.59 for DM, OM,CP,CF,EE and NFE respectively. The balances of N_2, Ca & P were 2.08±1.0; 0.693±0.145 and 0.12±0.09 gm/day respectively which were all positive. The DCP and TDN values were 10.45±0.2 and 56.38±0.15 respectively. As the CF %.of the fodder was somewhat higher(19.7%) due to its maturity, the experimental animals showed a tendency in lowering in body weight(7.21kg ±o.27) at the end of the experiment.

Key words *:* Berseem, DCP, Garole sheep and TDN.

Garole is an indigenous breed of sheep of small size and can thrive under extreme conditions(Banerjee and Banerjee, 2000) mostly reared by grazing. The nutritional trial was conducted on Garole sheep by feeding berseem (*Trifolium alexandrium*) as a sole fodder. The fodder was collected from Haringhata Farm, Govt. of West Bengal during middle of March/April and it was of last cut(4^{th}). Naturally the fibrecontent was also higher . The objective of this study was to examine the effect of this leguminous fodder on Garole sheep as information on this line using sheep as an experimental animal is limited.. The other objective of this experiment was also to study the feeding value of this high fibrous fodder on sheep.

MATERIALS AND METHODS

Fresh berseem fodder(last cut) was fed as the sole feed to eight adult Garole rams (aged about 1 year and average body weight being 7.78kg±0.29). Individual animals were housed in a specially designed wooden metabolic crate having provisions for collection of faeces and urine separately. Berseem was fed during the pre-experimental period for 21 days, followed by an experimental metabolic trial of 7 days. Fresh, clean drinking water was provided at all times. Samples of fodder, faeces and urine from the experiment were analyzed for proximate (AOAC, 1980) principles ; Ca and P were also determined (Talapatra *et.al.* 1940). Statistical analysis of the data were carried out in accordance with the procedure described by Snedecor and Cochran (1967) for a randomized block design.

RESULTS AND DISCUSSION

The results pertaining to the digestibility study of Garole sheep in utilization of 4^{th} (last) cut berseem forage has been presented in table-1. It is evident from the table that the body weight has been somewhat lowered on feeding berseem which is in conformity with the results of Valizadah (2000) who also assessed that sheep lost more body weight when reared on low to medium quality roughage. However, Economides (1988) observed that goats and sheep were able to utilize roughages with equal efficiency. Reddy and Reddy (1999) were of the opinion that lambs performed better than kids under intensive system of management(the findings tally well with the present findings). The poor quality of roughage was well consumed by rams, the findings are in consonance with that of Jakhmola and Pathak (1983) and Singh(1975). The digestibility co-efficients as regards to crude protein and crude fibre was better for Garole sheep. The last(4^{th}) cut of berseem was obtained during the middle of March when the ambient temperature was significantly on the rise. Hence, it may have had an adverse effect on the utilization of roughages. Similar observations were obtained by Dahlanuddin *et. al* (1996). The DCP and TDN values were found to be 10.45±8.2 and 56.38±0.15.

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Table 1 : Chemical compositions ,dry matter intake, digestibility co-efficients, balances of nitrogen, calcium, phosphorus and nutritive values

A. Chemical composition of (Trifolium alexandrium, 4th cut)

Nutrient	Dry matter (%)	Nutrient	Dry matter (%)
Moisture	79.0	Nitrogen free extract	51.9
Dry matter	20.5	Total ash	12.7
Crude protein	14.5	Calcium	2.2
Crude fibre	19.7	Phosphorus	0.21
Ether extract	1.2		

B. Body weight, dry matter intake, digestibility coefficients and balances of nutrients

i. Body weight and dry matter intake

Initial body weight(kg)	7.78 ± 0.29
Final body weight(kg)	7.21 ± 0.27
Gain/loss in body weight(kg)	-0.57
Dry matter consumption(g/day)	296.3 ± 37.90
Dry matter consumption(kg/100 kg body weight/day)	3.8 ± 0.52

ii. Digestibility co-efficients

Dry matter	73.07 ± 3.11
Organic matter	87.40 ± 1.90
Crude protein	72.07 ± 1.95
Crude fibre	53.81 ± 2.55
Ether extract	72.51 ± 1.72
Nitrogen free extract	66.41 ± 2.59

iii. Balances of nitrogen, calcium and phosphorus(g/day)

	Nitrogen	Calcium	Phosphorus
Intake	6.86 ± 2.11	6.512 ± 0.18	0.62 ± 0.10
Excretion through			
a) Faeces	1.11 ± 0.17	4.579 ± 0.24	0.31 ± 0.13
b) Urine	3.67 ± 0.30	1.24 ± 0.11	0.19 ± 0.10
Balance	+ 2.08 ± 1.00	+ 0.693 ± 0.15	+ 0.12 ± 0.09

C. Nutritive values (%)

a) Digestible crude protein(DCP)	10.45 ± 0.20
b) Total digestible nutrients(TDN)	56.38 ± 0.15
c) DCP intake kg/100kg BW/day	0.397 ± 0.07
d) TDN intake Kg/100kg BW/day	2.14 ± 0.41

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