

Research
Paper

Effect of different levels of Azolla meal on feed intake of Osmanabadi kids

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ABSTRACT

Eighteen osmanabadi kids of 3 months age were selected and distributed into three treatments viz., T₁ (control), T₂ (15% concentrate was replaced with azolla meal), T₃ (25% concentrate was replaced with azolla meal). The feeding was carried out for 3 months keeping roughages to concentrate ratio 67:33. The average crude protein, crude fibre, ether extract nitrogen free extract and cellulose were 24.98, 9.07, 3.35, 52.46 and 29.37 per cent, respectively. The average daily dry matter intake per kid was higher in treatments T₂ (0.35 kg) followed by T₁ and T₃ (0.34 and 0.33 kg, respectively), while the average FCE values in T₁, T₂ and T₃ were 20.46, 19.83 and 10.07, respectively.

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Key words : Azolla meal, Osmanabadi kids, DMI.

INTRODUCTION

India possesses the largest livestock population in the world, consisting of 222 million cattle, 95 million buffaloes, 124 million goats and 59 million sheep (FAO, 2004). In many areas in India native or natural pastures make up the bulk of feed for livestock which are of poor quality so also there is a substantial decrease in fodder cultivation and forests and grass lands. The feasibility of using non conventional feed resources as the basis for livestock production is increasing slowly. A wide range of non conventional feed and fodders have been identified suitable for feeding of animal. Leguminous species are referred as they have high crude protein, calcium and phosphorus and low crude fibre. Among those grown in water azolla is one which cultivated and is fed to various categories of livestock. Azolla is important among aquatic plants due to the occurrence of both photosynthesis and nitrogen fixation in the leaves and also because of its growth habit it appears a greater potential than tree leaves as source of protein minerals and vitamins for animals. The water fern azolla consists of various varieties viz., *Azolla pinnata*, *A. maxicana*, *A. nilotica*. Looking to the beneficial effects of feeding Azolla meal in the ration

of different livestock.

RESEARCH METHODOLOGY

Eighteen Osmanabadi kids of approximately similar weight irrespective of sex of three months age were randomly divided into three groups viz., T₁, T₂ and T₃ as treatments consisting 6 animals in each and each animal in the treatment was considered as replication. The kids subjected to different groups were fed for three months duration. The experimental concentrate feeds of T₁, T₂ and T₃ treatment groups prepared for feeding the respective treatments group animals were as below. The concentrate mixture was prepared by using 90 parts pelleted concentrate feed and 10 parts of groundnut cake. The proximate composition of feed ingredients used is given in Appendix I.

The observation recorded on feed intake, body weight and proximate analysis during the experimental period were subjected to statistical analysis in RBD.

RESULTS AND DISCUSSION

It was observed from Table 1, that the azolla meal

Appendix 1

T ₁ (control)	Consisting of prepared concentrate mixture (100%) without Azolla meal
T ₂	Consisting of prepared concentrate mixture (85%) adding 15 % by weight Azolla meal
T ₃	Consisting of prepared concentrate mixture (75%) adding 25 % by weight of Azolla meal

had higher CP and EE (24.98 and 3.35 %, respectively) than Lucerne green (22.53 and 2.60 %, respectively) and concentrate mixture (19.04 and 2.78 %, respectively). Crude fibre content was lower in azolla meal (9.07 %) than lucerne green (24.38 %). TA content was more in Lucerne green (11.08 %) than azolla meal (10.15 %) while less in concentrate mixture (6.34 %). Nitrogen free extract was more in concentrate mixture (61.38 %) than azolla meal (52.46 %) while less in Lucerne green (39.40 %). Singh *et al.* (1983), Parthasarathy *et al.* (2001) reported NDF per cent to be more than 39.00 per cent which is lower than obtained in present investigation. Tamang *et al.* (1992) and Lisoferentinos *et al.* (2002) reported lignin per cent to be more than 16 per cent which agrees with present investigation. Parthasarathy *et al.* (2001) reported less lignin than obtained in present investigation.

Table 1: Chemical composition of feeds and fodder fed to kids (% on DM Basis)

Sr. No.	Particulars	Concentrate mixture	Azolla meal	Lucerne green
1.	CP	19.04	24.98	22.53
2.	EE	2.78	3.35	2.60
3.	CF	10.45	9.07	24.38
4.	TA	6.34	10.15	11.08
5.	NFE	61.38	52.46	39.40
6.	CA	0.26	0.69	2.53
7.	P	0.35	0.68	1.98
8.	NDF	22.26	54.59	41.73
9.	ADF	12.78	35.49	33.25
10.	HC	9.48	10.09	8.48
11.	Cellulose	7.98	19.59	29.37
12.	Lignin	1.16	13.87	7.37

It was observed from Table 2 that CP, EE, CF, Ca, and P was more in T₂ and T₃ feeds while NFE was less than T₁ feed. This is due to more amounts of CP and minerals and less amount of CF and NFE in azolla meal than concentrate mixture prepared. The fiber fractions *i.e.* NDF, ADF, Hemicellulose, Cellulose, Lignin and Silica were found to be more in T₂ and T₃ feeds than T₁ feed,

Table 2: Chemical composition of ingredients and treatments concentrate feeds

Sr. No.	Particulars	Treatments		
		T ₁	T ₂	T ₃
1.	CP	19.04	20.72	21.85
2.	EE	2.78	2.86	2.92
3.	CF	10.45	11.90	12.63
4.	TA	6.34	7.38	8.45
5.	NFE	61.38	57.96	55.56
6.	CA	0.26	1.02	1.27
7.	P	0.35	0.48	0.51
8.	NDF	22.26	26.52	31.05
9.	ADF	12.78	15.08	17.15
10.	HC	9.78	11.44	13.90
11.	Cellulose	7.98	9.42	10.92
12.	Lignin	1.16	2.57	3.65
13.	Silica	1.6	1.62	1.86

which is due to more fiber fractions in azolla meal than concentrate mixture prepared. Singh and Subudhi (1978) and Parthasarathy *et al.* (2001) reported that CP present in azolla in range between 24-30 per cent, EE in range between 3-3.6 and NFE in azolla more than 50 per cent which is agrees with present investigation.

It is seen from data presented Table 3 average daily DM intake of experimental kids under different treatments differed significantly ($p < 0.05$).

Table 3: Average daily DM intake by kids during experimental period (kg)

Forth night	Treatments			S.E.±	C.D. at 5%
	T ₁	T ₂	T ₃		
1.	0.274 ^b	0.265 ^a	0.283 ^c	0.001	0.004
2.	0.331 ^b	0.370 ^c	0.321 ^a	0.001	0.005
3.	0.359 ^b	0.375 ^c	0.352 ^a	0.002	0.006
4.	0.360 ^b	0.375 ^c	0.352 ^a	0.002	0.006
5.	0.361 ^b	0.375 ^c	0.354 ^a	0.002	0.006
6.	0.361 ^b	0.375 ^c	0.354 ^a	0.002	0.006
Mean	0.34 ^b	0.35 ^c	0.33 ^a	0.001	0.005

The average daily DM intake was significantly more in T₂ (0.35 kg) followed by T₁ (0.34 kg) and comparatively less in T₃ (0.33 kg). The feed intake was found to be significantly decreased in T₃ than T₂ indicating that azolla meal feeding was effective upto 15 per cent in concentrate mixture which may be due to more fiber fraction in azolla meal.

It was observed from Table 4, that the average feed conversion efficiency values in groups *viz.*, T₁, T₂, T₃ were 20.46, 19.83 and 10.07 per cent, respectively. The feed

Table 4: Average feed conversion efficiency of experimental kids

Treatments	Total weight gain (kg)	Total feed consumed (kg)	Feed conversion efficiency
T ₁	6.65 ^b	32.49 ^b	20.46 ^b
T ₂	6.70 ^b	33.78 ^c	19.83 ^b
T ₃	3.21 ^a	31.89 ^a	10.07 ^a
SE ±	0.579	0.171	0.579
C.D. (P=0.05)	1.824	0.538	1.824

conversion efficiency was better in T₁ and T₂ groups and significantly ($p < 0.05$) less in T₃ group. It was worth noting that the feed conversion efficiency in 15 per cent azolla meal feeding *i.e.* T₂ groups was significantly ($p < 0.05$) higher than the 25 per cent azolla meal feeding *i.e.* T₃ group. It indicates that azolla meal can be utilized in concentrate ration of kids upto 15 per cent beyond which there is negative effect. The results are similar with Becerra *et al.* (1995) was reported feed conversion efficiency of 4.86 kg DM/kg gain when fed azolla meal in ducks upto 15 per cent.

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