UTILIZATION OF CABBAGE WASTE IN RABBITS

DEBASIS DE, ASIT DAS AND RAMESH CHANDRA
ICAR Research Complex for NEH Region
Sikkim Centre, Tadong, Gangtok - 737 102, India

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ABSTRACT

Twelve Soviet Chinchilla rabbits (6 months) were divided into two groups of six each on body weight and sex basis (5 female and 1 male). Fifty percent of DM requirement in both groups were met through concentrate mixture and rest through Nevaro *(Ficus hookeri)* and Amliso *(Thysanolaena agrostis)* leaves (2:1) in group I and through cabbage *(Brassica oleracea* var. capitata) waste in group II. DM intake was significantly ($p<0.01$) higher in group I. However, digestibility coefficients of DM, OM, CP, CF, NFE and EE were significantly ($p<0.01$, $p<0.05$) higher in group II. Nutritive value of diet of group II was also higher ($p<0.01$) but live weight gain did not differ significantly. Results revealed that cabbage waste can be used safely as a maintenance ration for adult rabbits when supplemented with concentrate mixture.

Key words : Cabbage waste, Feed utilization, Rabbit

Cabbage is an important vegetable crop of Sikkim. Generally, 50-70% of biological yield of vegetable crop is used for human consumption and remaining is discarded as vegetable waste. The ability of rabbit to convert available protein in cellulose rich fodder into meat (Labas *et al.*, 1986) coupled with climatic condition of north eastern Himalayan region make the rabbit suitable and most potential for meat production (Anonymous, 1983). In present study, efforts were made to investigate potentiality of cabbage waste as rabbit feed in Sikkim.

Twelve adult Soviet Chinchilla rabbits of six months age were divided into two groups on body weight and sex basis (5 female and 1 male in each group) and were housed individually in mesh wire cages with facilities for feeding, watering and excreta collection in a well ventilated house. Fifty percent of dry matter (DM) requirement of rabbits were met through concentrate mixture (maize 45 parts, mustard cake 40 parts, wheat bran 12 parts, mineral mixture 2.5 parts and common salt 0.5 parts) in both the groups. Rest of the DM requirement was met through Nevaro and Amliso leaves (2:1 on fresh basis) in group I and through cabbage waste in group II. Fresh drinking water was provided *ad lib.*, to both the groups. Daily feed intake and weekly body weight changes were recorded. After a preliminary feeding period of 38 day, a digestibility trial of 7 day collection period

was conducted. The feed and faeces samples were analyzed (AOAC, 1984) and data obtained were analyzed statistically (Snedecor and Cochran, 1986).

Table 1 Chemical composition (% DM) of feed materials

Parameters	Concentrate mixture	Cabbage waste	Nevaro leaves	Amliso leaves
Dry matter	89.54	10.94	33.78	34.05
Organic matter	94.75	89.50	86.92	90.65
Crude protein	24.76	22.75	14.20	17.50
Crude fibre	4.50	6.50	12.50	23.00
Ether extract	4.52	4.96	3.51	1.03
NFE	60.97	55.29	56.71	49.12
Total ash	5.25	10.50	13.08	9.35

Chemical composition of concentrate mixture, cabbage waste, Nevaro leaves and Amliso leaves is given in Table 1. CP content of cabbage waste was higher than Nevaro and Amliso leaves. However, CF content of cabbage waste was lower than Nevaro and Amliso leaves. Average concentrate mixture intake was significantly ($p<0.05$) higher in group I than in group II (Table 2).

Total DM intake in group I was also significantly ($p<0.01$) higher. The DM% of diet II (21.86) was less than diet I (52.14). When rabbits of group II were fed diet II on fresh basis it might cause more distention in stomach or duodenum due to its bulkyness which increases the activity in the vagus nerve and ultimately reduce the DM intake. Rabbits of group I consumed higher DM and in group II it was slightly less than NRC recommended level (NRC. 1966). However, digestibility coefficients of DM, OM, CP, CF and NFE were significantly ($p<0.01$) higher in group II as compared to group I. EE digestibility was also significantly ($p<0.05$) higher in group II. Less DM intake in group II might get more retention time in stomach or duodenum for digestion and absorption. Moreover OM, CP, EE, and NEE contents of diet II was more as compared to diet I which directly reflected in the digestibility of these nutrients. Although DM intake was higher ($p<0.01$) in group I but due to higher digestibility of nutrients in group II, DCP and TDN intake were similar in both the groups. Nutritrve value of the experimental diets indicated that DCP and TDN values were significantly ($p<0.01$) higher in diet of group II. Due to similar intake of nutrients in both the groups performance of rabbit in terms of live weight gain was also similar (Table 2).

Table 2 Dry matter intake, digestibility coefficient of nutrients in rabbits fed different experimental diets

Parameter	Diet I	Diet II
Mean Body Weight(kg)	1.86±0.06	1.97±0.05
Intake (g/day)		
Concentrate mix.*	69.32±7.04	52.16±2.96
Nevaro leaves	37.82±3.59	-
Amliso leaves	15.78±2.82	-
Cabbage waste	-	39.48±0.53
Total DMI**	122.91±5.17	91.64±3.10
Digestible nutrients intake (g/day)		
DCP	15.83±1.22	18.63±0.82
TDN	65.81±4.81	70.46±2.32
Digestibility coefficient		
Dry matter**	53.29±1.69	76.68±1.15
Organic matter**	55.01±1.94	78.31±1.15
Crude protein**	63.01±2.26	85.07±2.12
Crude fibre**	48.87±1.51	72.87±2.13
Ether extract*	62.88±6.59	79.38±0.98
NFE**	52.41±2.44	75.70±2.06
Nutritive value		
DCP (%)**	12.81±0.57	20.32±0.50
TDN (%)**	53.24±1.83	76.94±1.09
Live weight gain (g/day)	12.24±1.59	13.16±2.94

* $p<0.05$, ** $p<0.01$

So, it can be concluded that cabbage waste can be utililized as rabbit feed to produce as good performance as on traditional feeding system with Nevaro and Amliso leaves when supplemented with concentrate mixture.

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