

Nutritive Value of Chicory Leaves (*Cichorium intybus* L.)

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ABSTRACT

The chemical composition and nutritive value of chicory leaves (*Cichorium intybus* L.) were determined. Chicory leaves were found to contain c. protein 12.20%; ether extract 4.72% c. fibre 16.76%; N.F.E. 46.70%; ash 19.62%, silica 2.78%; phosphorus 0.40% and calcium 1.99%. The fodder was fed to adult Kankrej bullocks for about two weeks. The dry matter consumption per day was 1.85 kg, per 100 kg, body weight. The digestibility coefficients of organic nutrients were quite high. It provided about 8 kg, D.C.P. and 66 kg, T.D.N. per 100 kg. of dry matter. The balance of nitrogen, phosphorus and calcium were positive. Thus, this fodder can be fed to adult cattle as a maintenance ration.

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INTRODUCTION

CHICORY locally known as Kasani, Kashini or Kasni is found in Punjab, Haryana and Andhra Pradesh and it is a native of temperate area of the eastern hemisphere. Though the plant is known as "tonic" for quite a long time it was successfully cultivated for its roots for the first time in 1918 in Coimbatore in Tamil Nadu. Since then its cultivation has spread to Nilgiris; Devikolam in Kerala and Jamnagar and other districts of Gujarat. As the chicory roots are mixed with coffee seed powder in the ratio of 40:60 to give French Coffee, it has become now a cash crop. The chicory is grown only for its roots while the upper portion (tops) mainly consisting of leaves are left out in the field. Therefore, its leaves are available for feeding to the cattle. Only limited studies were made for utilising the leaves (Shukla, Ranjhan and Katiyar,

1970 and Ranjhan and Shukla, 1970). However, they have studied its composition and nutritive value as weeds. Hence, an attempt has been made to assess its nutritional value as fodder for feeding to the cattle.

MATERIALS AND METHODS

Six adults Kankrej bullocks were used as experimental animals for conducting the digestibility and balance trial. The bulk of chicory leaves were procured from Instituté Experimental Commercial farm and leaves were air dried under shed. These leaves were fed to the animals as such with no supplementation. After 10 days period of preliminary feeding, digestibility and balance trials were conducted for seven days collection period as per conventional methods. Samples of feed, feces and urine were analyzed by Anon (1970) methods.

RESULTS AND DISCUSSION

Chemical composition: The chemical composition of chicory leaves used during the digestibility trial is c. protein 12.20%, ether extract 4.72%, c.fibre 16.76%, N.F.E.%, 46.97, ash 19.62%, silica 2.78%, phosphorus 0.40% and calcium 1.99%. Thus it is revealed that chicory leaves are fairly good source of crude protein and rich in calcium. The crude fibre content is also comparatively less than the hay while ash content is very high. These results are quite similar to those reported by Shukla *et al.* (1970) except the protein content.

Palatability of chicory leaves: The data on average dry matter consumption indicated that all the animals were consuming on an average 6.36 kg of chicory leaves which comes to 1.85 kg of dry matter per 100 kg of body weight. These results suggested that chicory leaves are quite palatable.

Digestibility: The digestibility coefficients of the various organic nutrients have been determined and shown in Table 1, along with average digestible nutrients and balance of nutrients.

The digestibility data revealed a very high digestibility of carbohydrates. Also the digestibility of organic matter is about 78% which can be compared with the figures for the leguminous fodders like berseem, lucerne, cowpea, etc. (Morrison, 1956). Similar results were also observed by Shukla *et al.* (1970).

TABLE 1

Digestibility coefficients and nutrients.

Constituents Ani. No.	C. Protein	E. Ext.	C. Fibre	N.F.E.	Organic matter
1.	52.84	42.06	92.58	76.19	74.10
2.	67.85	59.71	90.98	79.38	79.00
3.	64.62	53.83	93.22	77.56	77.56
4.	65.91	60.45	94.07	81.35	80.48
5.	55.15	52.00	90.17	75.35	74.27
6.	68.79	60.70	90.08	81.62	81.71
AV.	62.52	54.79	91.85	78.56	77.85
S.E.	2.79	2.95	0.68	1.08	1.29
Average digestible nutrients T.D.N.					
	7.63	2.57	15.50	36.68	65.69

Nutrient balance (g/day/animal).

Nutrients Ani.No.	Nitrogen	Phosphorus	Calcium
1.	+35.17	+ 9.18	—10.82
2.	+52.32	+10.58	+ 7.94
3.	+51.76	+ 9.60	— 9.23
4.	+65.91	+15.75	+27.52
5.	+36.51	+ 8.38	—11.19
6.	+72.11	+16.10	+17.10
AV.	+52.30	+11.60	+ 3.55
S.E.	6.11	1.40	3.00

From the average digestibility coefficients the nutritive value of chicory leaves was calculated. It was found to have 7.63 and 65.69 kg. of D.C.P. and T.D.N. per 100 kg of dry matter respectively. Thus, this roughage is a good source of energy and protein.

Balance of nitrogen and minerals: The balance of nitrogen, phosphorus and calcium have also been determined.

The balance of nitrogen, phosphorus and calcium were found to be positive in all the experimental animals.

Thus these results suggested that chicory leaves may serve as maintenance fodder for adult animals. However, it was noticed that sole chicory leaves feeding has some laxative and diuretic effect, therefore while using constipative feeds like cotton seeds or cotton seed cake, mango seed kernels etc. this fodder may be fed along with them.

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