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## Nutrient evaluation of protein rich unconventional feeds available in Wayanad

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### Abstract

Feed cost is the most important factor which determines the profit or loss from a dairy enterprise. Nearly 70 – 75 per cent of the total cost of rearing a cow is contributed by feed cost alone. This is all the more important in Kerala where the cost of inputs such as feed and fodder are increasing day by day. In this scenario the requirement should be met from unconventional feeds. The nutrient quality of commonly available protein rich unconventional feeds in Wayanad were evaluated, in this study. Four protein rich unconventional feeds, viz. tapioca leaf meal, tea waste, coffee husk and pepper waste were analysed for proximate principles metabolisable energy (ME), digestible organic matter (DOM) and *in vitro* digestible nitrogen (IVDN) by *in vitro* gas production technique (IVGPT). Incorporation of locally available unconventional feeds to the maximum possible extent will help to reduce the feed cost, without compromising on production performance and ultimately result in growth of cattle population in Kerala.

**Keywords:** Unconventional feed, proximate analysis, IVGPT, milk production, economic rearing

### 1. Introduction

India is currently ranked first in milk production in the world, accounting for 18.50 and 59.00 per cent of the world and Asian milk production, respectively, achieving an annual output of 187.70 million tonnes during 2018-19, as compared to 176.30 million tonnes during 2017-18, recording a growth of 6.47 per cent, as against an only 3.10 per cent increase in world milk production, during the same period. This much of milk is produced in India by 302.30 million cattle, inclusive of 192.50 million cattle and 109.90 buffaloes (NDDDB, 2019) [4]. The cattle population of Kerala as per the latest census, ie., 2012 census was only 14.30 lakhs, ie., 0.50 per cent of the Indian cattle population, it pulls its weight by thrice its strength when it comes to milk production. In spite of the severe constraints imposed by the limited land availability and the ever swelling human population, the livestock sector in Kerala contributed 27.60 per cent of the Agricultural GDP of the State during 2016-17 (Kerala State Planning Board, 2017) [5]. For any feed to be economical, unconventional feeds have to be incorporated to the extent possible. Protein is a critical nutrient as far as milk production is concerned. Protein in conventional rations is contributed by oil meals like soybean meal, which are costly. Therefore, the possibility of incorporation of locally available, protein rich unconventional feeds, to the extent possible, have to be explored. Therefore the study was undertaken for nutritive evaluation of protein rich unconventional feed ingredients available in Wayanad.

### 2. Materials and methods

Four locally available unconventional feed ingredients which are rich source of protein, viz., tapioca leaf meal, tea waste, coffee husk and pepper waste were procured. These feeds were tested *in vitro* by the *in vitro* gas production technique (IVGPT) of Menke and Steingass (1988) [2] to estimate the metabolisable energy (ME) and digestible organic matter (DOM). The *in vitro* degradable nitrogen (IVDN) content of the feeds was determined by the procedure of Raab *et al.* (1983) [3]. The crude protein (CP) content of the above feeds was determined by standard procedure (AOAC 2016) [1].

### 3. Results and discussion

The proximate analysis (crude protein, crude fibre, ether extract and total ash), are given in Table.1 and the results of IVGPT (ME, DOM, IVDN) are given in the Table. 2. Higher protein was found in tapioca leaf meal and tea waste, with a CP of 22.38 and 21.84 per cent. Incorporation of these locally available unconventional feeds in the rations of dairy cows will help to meet the inadequacy of roughage and assist to achieve maximum production, scale

down the cost of production of milk which will finally result in growth of dairy sector of Kerala. Nevertheless, the level of incorporation and anti nutritional factors present should be taken into consideration before incorporation the ration.

**Table 1:** Proximate analysis of feeds

Feed	CP (%)	CF (%)	EE (%)	TA (%)
Tea waste	21.84	20.38	3.5	5.3
Coffee husk	11.82	23.16	2.5	6.3
Tapioca leaf meal	22.38	22.2	3.7	7.18
Pepper waste	13.34	16.73	1.1	8.2

**Table 2:** IVGPT of unconventional feeds

Feed	ME (MJ/kg)	DOM (%)	IVDN (% of total N)
Tea waste	5.59±0.12	44.63±0.34	38.52±0.28
Coffee husk	5.67±0.08	45.31±0.22	45.24±0.38
Tapioca leaf meal	5.44±0.05	43.51±0.36	37.73± 0.47
Pepper waste	3.39±0.15	32.89±0.58	36.21± 0.51

#### 4. Conclusion

Evaluation of nutritive value of protein rich unconventional feed ingredients which are available in Wayanad will help to create a nutrient profile of unconventional feeds. If a cattle feed can be prepared using such locally available unconventional feed ingredients, without compromising on milk production, it will aid a great deal in economic milk production and shall also serve as a better medium for agro-industrial waste utilization.

#### 5. Acknowledgement

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#### 6. References

1. AOAC. Official Methods of Analysis Association of Official Analytical Chemists, Washington, D.C. Edn 20, 2016, 1-77.
2. Menke KH, Steingass H. Estimation of the energetic feed value obtained from chemical analysis and gas production using rumen fluid. *Animal. Research Development*. 1988; 28:7-55.
3. Raab L, Cafantaris B, Jilq T, Menke KH. Rumen protein degradation a biosynthesis. I. A new method for determination of protein degradation in rumen fluid *in vitro*. *British Journal of Nutrition*. 1983; 50(3):569-82.
4. NDDDB. Official website of the National Dairy Development Board. Accessed online at <https://www.nddb.coop/information/stats/milkprodindia>. 2019.
5. Kerala State Planning Board. Economic Review. Official website of the Planning Board. Government of Kerala. Accessed online at <http://spb.kerala.gov.in/ER2017/web>. 2017.