



In vitro digestibility of mulberry tree leaves containing diets

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ABSTRACT

A study was undertaken to evaluate the nutritive values of mulberry leaves and various feed formulations containing mulberry leaves with respect to its nutritional potentiality replacing concentrate mixtures in sheep. Five experimental diets were prepared with incorporation of mulberry leaves replacing concentrate mixture @ 0% (C), 20% (T₁), 40% (T₂), 60% (T₃) and 80% (T₄) respectively. These rations were subjected to in vitro analysis to determine their dry matter, organic matter and neutral detergent fibre digestibility. Significant differences were observed for IVDMD, IVOMD and IVNDFDs with highest digestibility of dry matter, organic matter and neutral detergent fibre in T₄ where concentrate mixture was replaced at 80% level with incorporation of mulberry leaves. It is concluded that mulberry leaves (*Morus multicaulis*) have the potential to be used as feed in ruminants.

Key words: Mulberry leaves, In-vitro digestibility, Sheep, Kashmir valley

INTRODUCTION

Mulberry (*Morus alba*), traditionally used as feed for silkworm, has been the subject of research worldwide. During post-cocoon production, mulberry leaves are sufficiently available exclusively for feeding of livestock up to the onset of winter. The surplus foliage of mulberry leaves can be preserved for feeding during winter when green fodder is unavailable for feeding of livestock. Its leaves are relished by sheep and goats and have high nutritive value viz. 10.16% digestible crude protein (DCP) and 66.10% total digestible nutrients (TDN) (Ganai et al., 2010). Therefore, these leaves could be a supplement for sheep as partial or total replacement for costly concentrates. The present study was conducted to assess on its nutrient utilization in sheep with the in vitro digestibility of dry matter, organic matter and neutral detergent fibre in sheep fed diets containing different levels of mulberry leaves replacing concentrate mixture.

MATERIALS AND METHODS

The ingredients of experimental diets were analysed for proximate components (AOAC, 2000), fibre fractions (Van Soest et al., 1991) and Calcium and Phosphorus (Talapatra et al., 1948).

Five iso-nitrogenous and iso-caloric diets were

prepared (Table 2), as per NRC, 1985 feeding standard with incorporation of mulberry leaves replacing concentrate mixture @ 0%, 20%, 40%, 60% and 80% respectively and were designated as Control, T₁, T₂, T₃ and T₄, respectively. The in vitro digestibility of all these diets were carried out (Tilley and Terry, 1963) in which the feed samples were incubated for 48 h at 39°C in buffered rumen liquor taken from five adult sheep maintained on five treatment rations to meet their nutritional requirement. In vitro studies were conducted to determine in vitro dry matter digestibility (IVDMD), in vitro organic matter digestibility (IVOMD) and in vitro neutral detergent fibre digestibility (IVNDFD) of the experimental diets.

RESULTS AND DISCUSSION

Chemical composition of feed ingredients

Chemical compositions (% DM basis) of mulberry leaves as well as different feed ingredients (Table-1) shows that the average dry matter (DM) content of the mulberry leaves (24.92%) was similar to that reported by Ganai et al. (2010). The crude protein (18.50%) falls within the range of 15-28% as reported by Sanchez, 2000. Similar values were also reported by Bakshi and Wadhwa (2004), Kandvlis et al. (2009) and Sambul and Barman (2010) but, the values were higher than that reported by

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