

CELL WALL CONSTITUENTS IN SOME FORAGES OF GOATS

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ABSTRACT

Six non-pregnant and non-lactating adult goats were selected for evaluation of the two cultivated fodders (Lucerne and green maize) and three tree leaves viz. Babul (*Acacia arabica*), Ber (*Zizyphus mauritiana*) and Peepal (*Ficus religiosa*) for their cell-wall constituents. The animals were fed with each of the fodder as a sole feed for fifty seven days, of which 15 days as a pre-experimental period and 42 days as a experimental period, involving last seven days as a collection period. The NDF and ADF values were found to be lower in leguminous fodder (Babul and Lucerne) were higher in non-legumes (Ber, Peepal and Maize). Tree leaves except Peepal had lower NDF content than green lucerne whereas higher ADF content in tree leaves except Babul tree leaves than green lucerne. Legume have lower level of cellulose and hemicellulose than non-legume. Cell wall digestibility in maize was higher than lucerne and tree leaves. Dry matter digestibility was found to be negatively correlated with NDF, ADF and Cellulose constituents. Cell wall digestibility was found negatively correlated with ADF, cellulose, lignin and silica. Among these only lignin had significant effect.

Key words : Cell wall, Cellulose, Hemicellulose, Forages, Goat.

The limitation of weende system of proximate analysis of feed and fodders for their nutritive value led several workers to workout a method that might provide a more accurate information in this respect. Vansoest (1967) grouped fractions of dry matter into (I) cell contents, comprising lipids, soluble carbohydrates, protein and NPN (II) cell wall – composed of cellulose, hemicellulose, lignin, silica and some fibrous bound protein etc. The digestibility of these depends upon the lignification. Barnes (1973) reported that, the composition of cell-wall constituents is helpful for evaluation of forages. He further noted that, the quality of forages in respect of cell-wall constituents, is influenced by the extent of lignification. Herkin (1973) further observed that, the lignin is the primarily antiquality factor and which has drastic effect on digestibility of plant fibre. The present study was planned to investigate the cell-wall constituents of some of the fodders.

MATERIALS AND METHODS

In the present study two cultivated fodders (Lucerne and green Maize) and three tree leaves viz. Babul (*Acacia arabica*), Ber (*Zizyphus mauritiana*) and Peepal (*Ficus religiosa*) were taken to evaluate their cell-wall constituents in goats. Six non-pregnant and non-lactating adult goats were selected. The animals were fed each of the fodder as a sole feed for fifty seven days, of which 15 days as a pre-experimental periods and 42 days as a experimental period, involving last seven days as a

collection period. The method described by Goering and Vansoest (1970) was used for fibre analysis of forages.

RESULTS AND DISCUSSION

The average composition of tree leaves fodders and cultivated fodders, in the detergent system of analysis is given in Table 1 and nutritive value of these fodders in Table 2.

Neutral detergents and acid detergent fibre :

In general, the neutral detergents fibre (NDF) and acid detergent fibre (ADF) constituents of cell-wall are more in non-legume fodders than legume (Singh *et al.*, 1974; Gupta and Pradhan, 1975, Singh *et al.*, 1976 and Singh and Mudgal, 1983). In present study, the NDF and ADF values were found to be lower in leguminous fodder (*Babul* and *Lucerne*), whereas, these were higher in non-legumes (*Ber*, *Peepal* and *Maize*). Among the tree leaves, these constituents were higher in *Peepal* (Table 1).

It was further observed that, except *Peepal*, other tree leaves had lower NDF content than green *Lucerne*. On the other hand except *Babul* tree leaves, other two tree leaves had higher ADF content than green *Lucerne*. This was in agreement with Singh *et al.*, (1977) and Kundu and Sharma (1988), who while comparing the chemical compositions of some of tree leaves with common forages, observed that the tree leaves contained lower NDF and higher ADF than green oat. The present NDF and ADF values of *peepal* are less than those reported by Khatta *et al.* (1999) whereas the ADF values of the present study were similar with the values reported