

Ruminal N degradation of browse and temperate forages, and partition of N into carbohydrates

B Michalet-Doreau ¹, S Touré-Fall ²

¹ SRNH, Valeur Alimentaire, INRA Theix, 63122 Ceyrat, France;

² ISRA LNERV, BP 2057 Dakar, Sénégal

The lower N digestibility of browse forages can be explained by the presence of polyphenol compounds (tannins) (Ho Ahn *et al*, 1989) or by the partitioning of herbage N into structural carbohydrates. Van Soest and Sniffen (1984) suggested that partitioning herbage N into neutral and acid-detergent-soluble and -insoluble portions may explain ruminal N degradability. Our objective was to examine the latter hypothesis.

In the rumen the *in situ* N and cell wall N (NDFN, ADFN) degradability was measured of 2 forages harvested in a semi-arid zone of Senegal (*Acacia albida* and *Balanites aegyptiaca* leaves) and 2 temperate forages (cocksfoot and alfalfa hays).

The forages were ground through a 0.8-mm screen, and the browses were previously dried at 60°C. *In situ* degradation measurements (10 incubation periods over 1 and 96 h) were carried out using 3 non-lactating cows receiving 7 kg DM/animal/d of a diet of hay and concentrate (70/30). After incubation, the bags were washed, beaten for 7 min in a stomacher and

washed again to decrease the bacterial contamination of the bag residues. Ruminal degradability of different components was calculated by fixing particle turnover rate at 0.06/h⁻¹.

The N distribution was more homogenous in the temperate forages than in the browses studied. Consequently, the variation in N degradability was larger for the browses (from 26.7 to 82.6) than for the temperate forages (from 62.6 to 75.8%). The lowest N degradability of *Acacia albida* was due to high ADFN content (35.1%) and to the undegradability of the NDFN-ADFN fraction (table I). In our study, the lower N degradability of the browses could be explained by the N content in the cell wall.

Ho Ahn J, Robertson BM, Elliott R, Gutteridge RC, Ford CW (1989) *Anim Feed Sci Technol* 27, 147-156

Van Soest PJ, Sniffen CJ (1984) *Proc Distillers Feed Conf* 39, 73-81

Table I. Chemical composition and degradability of N and detergent-soluble and insoluble N of forages.

Forages	Composition (%)			Degradability (%)		
	N/DM	NDFN/N	ADFN/N	N	NDFN	NDFN-ADFN
Acacia	2.43	64.0	35.1	26.7	0	0
Balanites	5.19	17.2	5.5	82.6	17.7	20.7
Cocksfoot	2.40	48.2	7.2	62.6	26.1	26.8
Alfalfa	2.85	36.7	8.0	75.8	43.4	51.7