Effect of tannins on nitrogen balance and microbial activity of rumen fluid in sheep and goats

H. NARJISSE *, M. EL HANSALI **

* *National School of Agriculture, Meknes, Morocco*

** *National Institute of Agronomy and Veterinary medecine, Rabat, Morocco*

Oak leaves *(Quercus rotundifolia)*, an important forage resource in Morocco, significantly contribute to domestic livestock feeding especially after the growing season when the herbaceous vegetation becomes scarce. Unfortunately, the high content of this forage is suspected to limit the grazing animal performances. This study was designed to investigate the effect of tannins on the nitrogen balance in sheep and goats and on potentially related parameters such as plasma urea nitrogen (PUN) and rumen ammonia nitrogen. Additionally, the potential influences of increasing tannin concentrations on the fermentation capacity of sheep and goat rumen fluid were also investigated.

Results indicate that the infusion of 36 and 18 g of tannins into the rumen of four sheep and four goats fed approximately equal quantities of low quality hay, depressed the nitrogen balance in sheep (13.58 mg N/kg LW. in control animals versus — 8.06 mg N fixed/kg of liveweight in experimental animals), while it improved it in goats (85.14 mg N/kg LW. versus 123 mg N/kg of live weight).

However, infusion of tannin solutions similarly affected the plasma urea nitrogen concentration in sheep and goats. PUN decreased from 11.23 to 8.95 mg/100 ml and from 42.52 to 22.46 mg/100 ml respectively in sheep and goats. A similar pattern was also noted for rumen ammonia nitrogen which decreased in both animal species following tannin infusion.

On the other hand, the data obtained in an « *in vitro* » study indicate that the fermentation capacity of sheep rumen fluid tends to be inhibited by increasing amounts of tannins. On the contrary, an increase in the tannin concenration stimulates the rumen fluid fermentation capacity in goats.

Thus, incubation of rumen fluid with 12 p. 100 tannin concentration (on the dry matter basis of the substrate depressed the fermentation capacity of sheep rumen fluid by five points and improved that of goats by the same amount).

According to these results, which are in line with those obtained in a feeding behaviour study, it may be concluded that goats seem to tolerate tannins much better than sheep do. Further investigations are required to elucidate the mechanism of this tolerance.

Key words : Tannins, nitrogen balance, rumen, sheep, goat, urea.

Influence of roughage quality on feed intake, milk production and nutrient utilization in the lactating Saanen goat

J. KESSLER

Swiss Federal Research Station for Animal Production
Grangeneuve, CH-1725 Posieux

The influence of two hay diets of different quality on feed intake, milk production and nutrient utilization was studied in 12 lactating Saanen goats in a balance trial (beginning of the 1st adaptation period : 6 weeks after parturition). The experiment which was carried out as