

### **Degradation and outflow rate of protein supplements in the rumen of dry and lactating ewes and goats**

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Six dry Chios ewes and 6 dry Damascus goats an average weight of 58.1 and 60.0 kg, respectively were used in experiment 1. Animals were fed 42.8 g feed DM/kg<sup>0.75</sup> composed (kg/kg) of 0.46 kg concentrate and 0.54 kg barley straw. In another experiment, 6 lactating Chios ewes and 6 lactating Damascus goats with an average live weight of 64 and 60 kg, respectively were used. They were given 129.2 and 125.6 g feed DM/kg<sup>0.75</sup>, respectively. The feed composed (kg/kg) of 0.71 concentrate, 0.17 barley hay and 0.12 lucerne hay. At the end of a 14 day adaptation period, each animal was dosed with 40 (expt. 1) or 50 g (expt. 2) of Cr-treated soybean meal. Rectal grab samples were then taken over a 90 h period at 6 h intervals starting 12 h after labelling. Soybean meal was treated with sodium dichromate as outlined by Elimam and Ørskov (1984, *Anim. Prod.*, vol. 38, p. 45). Mean fractional outflow rate (% per h) of Cr-treated soybean meal from the rumen was taken as the slope of the regression line calculated from the regression equation of natural log faecal Cr concentration and time. It was suggested that Cr-treated particles behaved in a similar way to original ones. Treatment of soybean with Cr resulted in a decrease of DM losses from dacron bags incubated in the rumen of sheep and goats for 40 h (untreated 0.610 v treated 0.089). Outflow rate of small particles (% per h) from the rumen of the two species was similar (dry ewes 5.4, dry goats 5.7; lactating ewes 8.6, lactating goats 8.1). Higher outflow rates from the rumen of animals offered high rather than low roughage diets has been reported by some authors. Thus, the higher values obtained in lactating compared to dry animals should be associated with the level of intake.

In another experiment, the *in situ* degradation of fish meal (FM) and soybean meal (SBM) was measured in the rumen of 3 Chios ewes and 3 Damascus goats fed *ad libitum* on 200 g concentrate, 200 g lucerne hay and straw. Nylon bags were incubated for 2, 6, 16, 24 and 32 h. There were no differences between ewes and goats for effective DM (EDM) and CP (ECP) degradability (degradability values at various incubation periods combined mathematically with outflow rates of small particles from the rumen) within supplements (outflow rate 5%/h: SBM-EDM ewes 37, goats 39; ECP ewes 27, goats 28; FM-EDM ewes 32, goats 37; ECP ewes 38, goats 39%).

*Key words* : Ewes, goats, outflow rate, degradability.

### **Effect of protein source on performance of lactating Chios ewes and Damascus goats, and degradability of protected and unprotected soybean meal in the rumen of goats**

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Two trials, one involving 36 twin suckling Chios ewes and the other 32 twin suckling Damascus goats were conducted to study the effect of protein source (fish meal vs soybean meal) on preweaning milk yield and its composition and growth performance of offspring. Feed supply (kg/day) of ewes consisted of 2.36 concentrate, 0.41 lucerne hay (247 g CP/kg DM) and 0.56 barley hay (80 g CP/kg DM); the corresponding values for goats were 2.18, 0.31 and 0.61, respectively. The concentrate mixtures were in pelleted form. The control (C) concentrate mixture in both trials was composed (kg/t) of 736 barley grain, 195 soybean meal (SBM), 50 wheat bran, 5 dicalcium phosphate, 10 limestone and 4 NaCl. In the ewe trial, SBM was totally replaced by