Effects of the use of heather as anthelmintic in goats infected with *Trichostrongylus colubriformis* on ruminal fermentation and digestibility

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Previous field studies performed by our group supported the absence of a nutritional cost counteracting the beneficial anthelmintic effect of supplementing the diet of grazing goats with tannin-containing heather. With the aim to go deeper into this issue, an experimental trial was carried out indoors with eighteen does that were artificially infected with *Trichostrongylus colubriformis* larvae. Goats were offered lucerne hay *ad libitum* for 6 weeks and then housed individually and assigned to three treatments (diets): lucerne hay (L), 70% lucerne hay + 30% heather containing 6.4 g of tannic acid equivalents/kg DM (LH), and 70% lucerne hay + 30% heather + polyethylene glycol (35 g PEG/animal and day; LH+PEG). Rumen fluid was obtained from each animal via a stomach tube after 10 (period 1) and 36 (period 2) days on treatments and afterwards total faecal output was collected for 5 consecutive days to assess gastrointestinal nematode egg excretion, and DM and CP digestibilities. Total daily faecal egg excretion was significantly reduced in does consuming heather (491,216 for L *vs.* 234,311 and 194,356 for LH+PEG and LH; $P<0.05$). Although, as previously observed, rumen volatile fatty acid concentrations were greater in those animals (114.9 *vs*. 102.2 *vs*. 83.5 for LH, LH+PEG and L, respectively, $P<0.05$), the use of PEG increased DM and CP digestibility coefficients ($P<0.05$). Results from an *in vitro* ruminal fermentation study, using the gas production technique, suggest an adaptation of the rumen microbiota in goats supplemented with heather that was not reflected in differences between digestibility coefficients in periods 1 and 2. The fact that the treatment including PEG (LH+PEG) significantly improved the apparent digestibilities of DM (6%) and CP (13%) when compared to LH, but both reduced the egg excretion in the same proportion, might suggest that the threshold of tannins requested to obtain anthelmintic effects is probably quite low.

Key words: nutrition, parasite, rumen, tannin

13th Seminar of the FAO-CIHEAM Sub-Network on Sheep and Goat Nutrition

Challenging strategies to promote the sheep and goat sector in the current global context

León, Spain, October 14-16, 2009