

Anthelmintic effects of sericea lespedeza hay fed to goats infected with *Haemonchus contortus*

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Introduction Infection with gastrointestinal nematodes (GIN), particularly *Haemonchus contortus*, is the major hindrance to economic goat production in the southern USA. Grazing forages high in condensed tannins (CT) or adding purified CT to the diet has been shown to reduce numbers of parasite eggs in sheep and goat faeces (Min & Hart, 2003). An alternative to grazing is feeding hay from CT-containing forages to livestock to reduce the effects of GIN (Shaik *et al.*, 2004). The purpose of the current study was to test potential anthelmintic effects of feeding sericea lespedeza [*Lespedeza cuneata* (Dum.-Cours.) G. Don] hay to goats.

Materials and methods Twenty 4-month-old Boer male goats were randomly assigned to two groups of 10 each based on faecal egg count (FEC). One group was fed long stem sericea lespedeza hay and the other bermudagrass hay. The diets were balanced for protein and energy with a small amount of supplement (ground maize, soybean meal poultry fat, trace mineral salt and vitamin premix). The diets comprised 80 % hay and 20 % supplement by weight. Hay was fed at 3.5% of body weight. During the pre-trial and trial periods, a trickle infection was given three times a week (500 *H. contortus* larvae/animal). All the goats were fed bermudagrass hay for 5 weeks (pre-trial period), after which two pens were switched to the sericea hay ration for 6 weeks (trial period). Throughout the experiment, FEC and blood packed cell volume (PCV) were monitored on a weekly basis. Data were analysed by repeated measures analysis with the pre-trial and trial periods analysed separately.

Results Egg counts were similar between the two groups during the 5-week pre-trial period (Table 1). During the 6-week trial period, treatment, time, and treatment x time effects were all significant ($P < 0.05$). Egg counts dropped by 79.7 % the week after sericea feeding was started and were lower ($P < 0.05$) in the sericea-fed group during each week of the trial period. During the pre-trial period, PCV was higher ($P < 0.05$) in control animals (27.2) than in the sericea-fed goats (24.3), while PCV was higher ($P < 0.05$) in the treatment group than in the control animals during the trial period (19.7 versus 23.1, respectively).

Table 1 Worm egg counts in goats infected with *H. contortus* larva and fed sericea lespedeza or bermudagrass hay

Diet	Week of sampling ¹										
	1	2	3	4	5	6	7	8	9	10	11
	----- Parasite eggs per gram of faeces -----										
Bermudagrass hay + concentrates	275	325	825	2994	538	2106 ^a	1872 ^a	1350 ^a	2083 ^a	2622 ^a	2467 ^a
Sericea lespedeza hay + concentrates	250	306	756	1919	1856	428 ^b	294 ^b	700 ^b	483 ^b	294 ^b	333 ^b
Standard error	81	39	153	712	251	360	144	191	144	224	196

¹Pre-trial weeks 1-5, trial weeks 6-11; ^{a,b}Column means with unlike superscripts differ significantly ($P < 0.05$)

Conclusions Feeding sericea lespedeza hay to goats reduced FEC by approximately 80% compared to bermudagrass hay and may be an effective means of reducing egg shedding on pasture. Although the main effect may be on worm fecundity, higher PCV in goats fed sericea hay compared with bermudagrass hay suggests a direct anthelmintic effect.

References

- Min, B.R. & S.P. Hart (2003). Tannins for suppression of internal parasites. *Journal of Animal Science*, 81(E. Suppl. 2), E102-E109.
- Shaik, S.A., T.H. Terrill, J.E. Miller, B. Kouakou, G. Kannan, R.K. Kallu, & J.A. Mosjidis (2004). Effects of feeding sericea lespedeza hay to goats infected with *Haemonchus contortus*. *South African Journal of Animal Science (Suppl. 1)*, 234-236.